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Three Essays on Distribution Intermediaries and Innovation: An Information Perspective

par

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Résumé

Cette thèse, composée de trois essais empiriques, utilise une perspective informationnelle pour investiguer comment l'information est générée, échangée et utilisée dans les canaux indirects de distribution. Plus spécifiquement, elle se situe à l'intersection de la gestion du canal de distribution et de l'innovation, des solutions d'affaires et des marchés financiers.

Le premier essai s'intéresse à la façon dont l'information qui circule entre les membres du canal de distribution contribue à l'innovation. Une typologie originale des activités de traitement de l'information des intermédiaires de distribution est développée à partir de la littérature et des résultats de 14 entrevues semi-structurées. La typologie contribue à la littérature en innovation et en distribution en montrant qu'il n'existe pas qu'un seul type de traitement de l'information, mais au moins quatre différents. Lors de la gestion du cycle de vie du produit, il apparait que les intermédiaires de distribution peuvent agir en tant que "problem informers", "solution informers", "solution managers" ou "solution implementers". Ces types diffèrent en termes de : 1) niveau de compétence du distributeur en matière de traitement de l'information marketing et technique; 2) complexité de la tache reliée au nouveau produit.

Le deuxième essai porte sur l'information générée dans le contexte des solutions d'affaires et sur ses conséquences pour les fournisseurs de solutions, dans cette recherche, l'intermédiaire de distribution. Le premier objectif de la recherche est de fournir de l'évidence empirique en support des affirmations sur les bénéfices des solutions d'affaires sur la rétention, les ventes totales et les ventes croisées. Les deuxième objectif est tester deux explications alternatives prédisant des bénéfices plus importants lorsque les solutions d'affaires sont fournies à des clients existants ('solution comme levier') ou nouveaux ('solution comme accélérateur). Ces deux explications sont issues de la vision basée sur le processus ("process-centric", traduction libre) des solutions d'affaires et de la théorie du cycle de vie des relations

inter-organisationnelles. Les résultats de l'analyse des données de ventes d'une compagnie nord-américaine qui offre des solutions : 1) confirment empiriquement l'effet positif des solutions mentionné dans la littérature; 2) appuient l'explication de la 'solution comme accélérateur', étant donné que des gains plus importants sont documentés pour les nouveaux clients par rapport aux clients existants.

Le troisième essai aborde les implications de la circulation de l'information à l'extérieur du canal, en analysant l'impact financier des prix en distribution. Une étude utilisant l'approche évènementielle a été effectuée pour tester quatre hypothèses basées sur la théorie du signal. Les données analysées proviennent d'une base de données originale de communiqués de presse annonçant 178 prix de distribution pour la période 1996-2012. Les résultats contribuent à la recherche à l'interface marketing-finance en indiquant que: 1) les prix de distribution n'ont pas un impact absolu sur la valeur financière de leurs récipiendaires; 2) la côte boursière est plus positive si les prix sont remis au cours d'évènements et à des compagnies œuvrant dans des marchés plus concentrés; aucune différence n'est détectée par rapport à la source du prix, celle-ci étant une partie prenante externe, une compagnie privée ou publique.

Mots-clés : canal de distribution indirect, information, processus de développement de nouveaux produits, gestion du cycle de vie du produit, solutions d'affaires, cycle de vie de la relation, prix et reconnaissances, impact financier, marketing industriel, recherche qualitative, recherche quantitative

Abstract

By means of three empirical essays, this dissertation adopts an information perspective to investigate how information is generated, exchanged and used in indirect marketing channels. More specifically, it sheds light into the information dynamics that occur in the marketing channel and that intersect with innovation, solution provision and financial markets.

The first empirical essay examines how the information flowing between marketing channel members contributes to innovation. An original typology of information processing activities by distribution intermediaries is developed by combining insights from the literature and findings from 14 in-depth interviews. The typology contributes to innovation and channel literatures by showing that there is no "one-size-fits-all" type of information processing, but at least four different ones. During the product lifecycle management, distribution intermediaries are found to act as "problem informers", "solution informers", "solution managers" or "solution implementers". These types of information processing differ in terms of: 1) level of distributor competence in processing marketing and technical information; 2) complexity of the new product-related task involved.

The second essay focuses on the information generated in the context of customer solutions and on its consequences for solution providers, in our research, for the distribution intermediary. The first goal of this essay is to provide empirical support to previous claims on the positive effect of solution provision on retention, total sales and cross-selling. The second goal is to test two competing explanations predicting a stronger positive effect of solutions when solutions are provided to established ('solution as leverage') or to new customers ('solution as accelerator'). The two explanations are derived from the "process-centric" view of solutions and from interorganizational 'relationship lifecycle' theory. The findings issued from the analysis of objective sales data from a North American company: 1) document the positive impact of solution provision on customer retention, total sales and cross-selling, as discussed in the literature; 2) support the 'solution as accelerator'

explanation, given that higher gains are found to be obtained from new rather than from existing customers.

The third essay addresses the implications of the information flow outside the channel and tackles into the financial impact of channel awards. An event study is designed and a set of four hypotheses are tested based on signaling theory. The data consists of an original database of press releases announcing 178 channel awards in the period 1996 to 2012. The findings contribute to the growing body of research at the marketing-finance interface by showing that: 1) channel awards on their own do not seem to have an impact on the market value of their recipients; 2) the stock return is more positive when channel awards are given during dedicated events and to firms that operate in more concentrated markets; no difference is found concerning the source of the award (i.e., external stakeholder organization versus private or public company).

Keywords : Indirect Distribution Channel, Information, New Product Development Process, Product Lifecycle Management, Business Solutions, Relationship Lifecycle, Awards and Distinctions, Financial Impact, Industrial Marketing, Qualitative Research, Quantitative Research

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List of Abbreviations

AR = Abnormal Return

B-to-B = Business-to-business

CAR = Cumulative Abnormal Return

CRSP = Center for Research on Security Prices

HHI = Herfindahl–Hirschman Index

LTS = Least Trimmed Squares

MEMD= Mixed-effect, mixed-distribution [model]

NAICS= North American Industry Classification System

NPD = New Product Development

NYSE = New York Stock Exchange

OLS = Ordinary Least Squares

PLM = Product Lifecycle Management

PR = Press Release

SIC = Standard Industrial Classification

SME = Small- and medium-sized enterprise

U.S. = United States

USA = United States of America

VIF = Variance Inflation Factor

A Maria Bellinghieri e Giuseppa Zagami

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Ad maiora. Semper.

Foreword

This dissertation consists of three essays that have been or that will be submitted to peer-reviewed marketing journals.

The first essay, titled "Innovation through Distribution Intermediaries: An Information Processing Typology", was submitted to the *Journal of Product Innovation Management* in April 2013. In June 2013, the article received a "revise and resubmit" evaluation from the editorial board. I am currently working on the revision together with my co-authors: Ulrike de Brentani, Renaud Legoux and Jean-François Ouellet.

The second essay, titled "Business-to-Business Relationships on the Fast Track: An Empirical Investigation into the Outcomes of Solution Provision", is in preparation for submission to the *Journal of the Academy of Marketing Science*. The co-authors of this essay are: Renaud Legoux and Ulrike de Brentani.

The third and last essay, titled "The Effect of Channel Awards on Firms' Value", is in preparation for submission to a special issue of the *Journal of Retailing*. The submission is planned for May 2014. The co-authors of this essay are: Renaud Legoux and Ulrike de Brentani.

I am the first author of the three essays. For each essay, I have reviewed the extant literature, developed the conceptual framework, designed and conducted the data collection and the data analysis, to conclude with the writing of the essay based on all the above. My co-authors accompanied the entire process and provided their feed-back and suggestions at the different stages of the process, as well as on the preliminary versions of the essays.

Chapter 1.

General Introduction

This dissertation, comprised of three empirical essays, explores how information is generated, exchanged and used in indirect marketing channels. Coughlan, Anderson, Stern, and El-Ansary (2006, p. 10) clearly mention that "producing and managing information well is at the core of distribution channel excellence." However, the role of information in marketing channels has received only limited attention. Two theoretical perspectives dominate the marketing channel literature: the *economic system* view and the *social system* view (Rosenbloom, 2013; Stern & Reve, 1980). Envisioning marketing channels through an informational lens is compatible with both views. More importantly, both views recognize the prominence of information for the proper functioning of marketing channels.

The view of the marketing channel as an *economic system* emphasizes "costs, functional differentiation and channel design" issues (Stern & Reve, 1980, p. 53). Within this research stream, scholars have investigated how channel members share the performance of the fundamental tasks (or flows) involved in the distribution process. Coughlan et al. (2006) identify eight marketing flows in the context of channel activities: physical possession; ownership; promotion; negotiation; financing; risking; ordering; payment; and information. Rosenbloom (2013) reduces the number of flows to five, including: product; negotiation; ownership; information; and promotion. Whereas Rosenbloom (2013) and Coughlan et al. (2006) diverge in the number of flows performed by channel members, both agree on the prominent role of the information flow in ensuring the proper functioning of the channel itself. Coughlan et al. (2006, p. 10) affirm that information "permeates all the value-added activities of the channel" and has the potential to improve the different functions performed by channel members. Rosenbloom (2013) echoes this affirmation by

underlining how all the processes performed by channel members are contingent on the information exchanged between them. Thus, along with the financial, spatial, human, relational, and organizational resources exchanged among the parties (Morgan & Hunt, 1994; Weber, 2001), information is a key resource that enhances the effectiveness of the distribution functions.

The view of the marketing channel as a *social system* in turn emphasizes the social interactions and processes occurring between suppliers, distribution intermediaries and end users (Dwyer, 1995; Stern & Reve, 1980). In fact, "the marketing channel is very much a social system subject to the same behavioral processes characteristic of all social systems" (Rosenbloom, 2013, p. 112). Channel relationships have attracted a significant amount of research as they are the result of a delicate balance between, on the one hand, power, conflict, and opportunism; and on the other hand, cooperation, trust and commitment (Anderson & Narus, 1990; Geyskens, Steenkamp, & Kumar, 1999; Palmatier, Dant, & Grewal, 2007). Within this view, information plays an important role in the development of a working relationship between channel members (Anderson and Narus 1990; Frazier, Maltz, Antia, and Rindfleisch 2009). At the same time, the channel relationship affects the type and extent of information shared, which in turn impacts the nature and quality of the channel relationship and of the activities performed by channel partners (E. Anderson & Weitz, 1992; Frazier, Maltz, Antia, & Rindfleisch, 2009; Morgan & Hunt, 1994).

Thus, a close relationship exists between the information flow, the activities performed by channel members, and the relationship established between them. Based on the importance of information in both views, this dissertation explores three outcomes of the information flow generated in the indirect marketing channel. Three empirical studies (Figure 1.1) explore the implications of this information flow for highly information-intensive marketing activities, such as: new product development (NPD); solution provision; and awards presented as part of channel management

activities (Coughlan et al., 2006; Glazer, 1991; Moenaert, Caeldries, Lievens, & Wauters, 2000; Tuli, Kohli, & Bharadwaj, 2007).

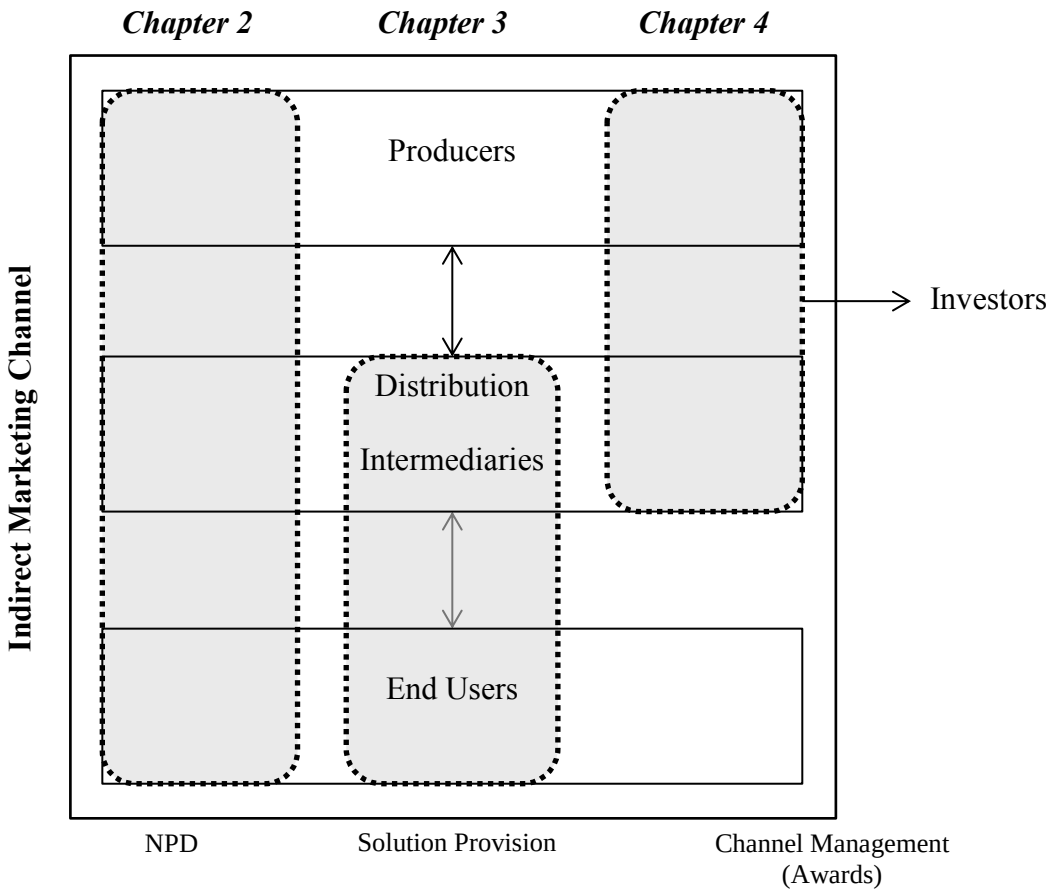

Figure 1.1 : Visual summary of the dissertation, based on Rosenbloom's (2013, p. 17) information flow

The first empirical study explores the role that information processed by distribution intermediaries plays in the context of NPD (Chapter 2). Extant literature acknowledges that distributors play an important role during the launch of new products (Di Benedetto, 1999) and that they are a relevant source of market information (Pimentel Claro & Oliveira Claro, 2010). This empirical investigation

adopts an information-based perspective to investigate how the broader contribution of distribution intermediaries to innovation, advocated by Song and Zhao (2004) and Yoon and Lilien (1988), unfolds. More specifically, its goal is to further explore how distributors can contribute to producers' incremental innovation through the information they process once a new product is launched to the market, through activities such as technical support or customization (Coughlan et al., 2006; Mudambi & Aggarwal, 2003). Organizational information processing (Galbraith, 1973; Tushman & Nadler, 1978) provides the theoretical foundation. This investigation adopts a typological approach (Doty & Glick, 1994; George & Bennett, 2005) to identify recurring patterns in distribution intermediaries' information processing activities. The typology developed combines elements from the literature and insights from an original exploratory investigation consisting of fourteen in-depth interviews with managers of industrial distribution and production companies. Four distinct scenarios emerge, in which distribution intermediaries are shown to act as "problem informers", "solution informers", "solution managers" or "solution implementers". These scenarios differ in terms of: (1) level of distributor competence in processing marketing and technical information; (2) complexity of the new product-related task involved. As shown in Figure 1.1, this first empirical study discussed in Chapter 2 focuses on the distribution intermediary as information processing entity and sheds light into the information flowing between producers, distribution intermediaries, and end users in the context of new product development activities.

The second empirical study investigates the role of information when distribution intermediaries are involved in the provision of customer solutions (Chapter 3). As relational processes addressing a specific customer business need that include a customized integration of goods and/or services (Bharadwaj, Naylor, & ter Hofstede, 2009; Tuli et al., 2007), customer solutions are highly information-intensive. The goal of this investigation is to understand how information about customers and their needs can help distribution intermediaries providing solutions to obtain higher gains in terms of customer retention, total sales and cross-selling opportunities. There is a paucity of empirical evidence concerning these positive

performance-related outcomes (Nordin & Kowalkowski, 2010; Sawhney, 2006). Furthermore, ambivalent arguments are found regarding which category of customers—new or existing (Bonney & Williams, 2009)—are likely to produce these positive effects. This empirical investigation addresses both gaps: (1) by assessing the impact of solutions on performance-related outcomes in empirical terms; (2) by determining whether solutions are likely to produce higher gains when provided to existing customers (i.e., 'solution as leverage' explanation) or when provided to new customers (i.e., 'solution as accelerator' explanation). The conceptual development is guided by the process-centric view of solutions (Tuli et al., 2007) and by the relationship lifecycle theory (Dwyer, Schurr, & Oh, 1987; Jap & Anderson, 2007). Sales data from a North American industrial company that provides solutions in cooperation with its upstream suppliers and customers are analyzed. In addition to providing empirical support to prior claims regarding the positive outcomes of solution provision, the results show that solutions produce higher gains in these performance-related outcomes when provided to new customers, in line with the 'solution as accelerator' explanation. As shown in Figure 1.1, this second empirical study contributes to a deeper understanding of how information flowing between distribution intermediaries and end users in the context of customer solutions influences performance outcomes.

The third and last empirical study expands the scope of the two previous ones to include the external impact of information flowing within the channel (Chapter 4). More specifically, it addresses the financial impact of channel awards as new information about the channel relationship made available to investors. Signaling theory (Connelly, Certo, Ireland, & Reutzel, 2011; Spence, 1973) is adopted as underlying theoretical framework to conceptualize channel awards as signals, in line with previous studies in marketing and management (Basuroy, Desai, & Talukdar, 2006; Hendricks & Singhal, 1996). To explore how this information influences investors' assessment of the market value of the award recipient, an event study is designed (Fama, Fisher, Jensen, & Roll, 1969; McWilliams & Siegel, 1997). Building on signaling theory, three contingencies are hypothesized to increase the market value

of the recipients, namely, *who* presents the channel award, *how* and *in what context*. The data consists of an original database of press releases announcing channel awards in the period 1996 to 2012. The findings show that channel awards on their own do not seem to have an impact on the market value of their recipients. Regarding the three contingencies explored, the stock return is more positive when channel awards are given during dedicated events and to firms that operate in more concentrated markets; no difference is found concerning the source of the award (i.e., external stakeholder organization organization versus private or public company). As shown in Figure 1.1, the third empirical study presented in Chapter 4 views channel awards not only as information flowing between channel members, but also as information shared with outsiders to the channel, such as investors.

Taken together, the three empirical studies featured in this dissertation contribute to a better understanding of the dynamics of the information flow in indirect marketing channels and of its consequences. This dissertation is structured as follows. After this introduction (Chapter 1), the three empirical studies are presented (Chapters 2 to 4). A general conclusion follows to summarize the contributions of our findings and discuss their implications for both marketing theory and practice, along with future research avenues (Chapter 5).

Chapter 2.

Innovation through Distribution Intermediaries: An Information Processing Typology

Abstract

After the initial launch of a new product by a producer, distributors are frequently among the first to learn about product-related problems through the feedback they get from customers about how the product is perceived and used, and how it can be improved or adapted for broader market coverage. For producers, such information can be decisive for ensuring that the product lifecycle management (PLM) activities that follow new product development (NPD) launch enhance the continued competitive viability of the product. It is the goal of this article is to better understand how distributors contribute to producer NPD efforts during PLM. Based on organizational information processing theory and the findings from 14 semi-structured interviews with distributors and producers in the industrial sector, a typology of four distinct NPD-related scenarios are detailed, in which distributors are shown to act as "problem informers", "solution informers", "solution managers" or "solution implementers". These scenarios differ in terms of level of distributor competence in processing marketing and technical information, as well as the complexity of the new product-related task involved. Scholars interested in understanding the NPD process and the link between innovation and channel member activities, should consider these variations in distributor behavior, as they lead to more or less elaborated informational outcomes. Developers of new products can use the typology as part of a strong post-launch PLM program, allowing them to take full advantage of the NPD-related contributions of distributors for ensuring customer satisfaction, offsetting competition and sustaining a competitive advantage.

Key Words: New product development, product lifecycle management, information processing, marketing channel, distribution intermediaries, incremental innovation.

2.1. Introduction

A recent survey conducted by Accenture (2009) shows that top performing innovative manufacturing companies "obtain new ideas from channel members and distributors for more than 25 percent of their new products" (p. 12). This supports the contention by Yoon and Lilien (1988) that distributors contribute to improving producers' new product development (NPD) process, and that companies increasingly make a connection between their innovation and channel management activities. Thus, indirect channel members, or distributors (e.g., wholesalers, resellers, industrial distributors or manufacturing agents), whose primary function is to make products and services available for use or consumption (Coughlan, Anderson, Stern, & El-Ansary, 2006), can also be viewed as contributing to product innovation through the information they provide to producers. This information is typically gathered and processed by distributors during their contacts with customers and their efforts to ensure effective market coverage of the products they sell (Frazier, Maltz, Antia, & Rindfleisch, 2009; Pimentel Claro & Oliveira Claro, 2010). In effect, after the initial launch of a new product by a producer, distributors often are among the first to learn about and identify product-related problems through the feedback they get from customers about product usage issues, need for technical support, or requests for product customization (Crawford & Di Benedetto, 2008; Pappu, 2005; Ulrich & Eppinger, 2004). Thus, distributors not only provide information about market trends and competition, but also regularly have access to knowledge about how products are perceived and used by customers, and how they can be improved (Mudambi & Aggarwal, 2003; Song & Zhao, 2004; Weber, 2001). For producers, such information is of importance during the decisive product lifecycle management (PLM) activities that follow the initial launch of a new product and that ensure the continued competitive viability of the product through relevant modifications, updates and improvements (Ausura, Gill, & Haines, 2005; Urban & Hauser, 1993).

Despite the importance of this type of NPD-related information, distributors are rarely acknowledged by researchers and practitioners as a source of knowledge that should be integrated as part of the extended NPD process, including the post-launch PLM phase. While the literature consistently emphasizes the importance of information input to PLM from internal sales personnel or from suppliers (Ausura et al., 2005; Ernst, Hoyer, & Rübsaamen, 2010; Saalsvuori & Immonen, 2008), distributors tend to be viewed primarily in terms of their traditional channel function whose primary role is that of intermediary sales agent (Ausura et al., 2005; Urban & Hauser, 1993). Indeed, only a handful of authors have devoted some attention to the potential of distributors for contribution to the innovation effort of producers as a source of product/market-related information relevant for post-launch NPD activities (Biemans, 1991; Frazier et al., 2009).

As a result, an incomplete and highly skewed view emerges of the potential sources of NPD-related information relevant for PLM. Current findings about input from suppliers and internal salespeople cannot be directly applied to distributors; this, because they perform different functions and because they are situated at different points in the supply chain. When considering supplier input, given their upstream channel position, they clearly have much less access to customers and to information about market needs than distributors. When comparing distributor to internal sales force input, information from distributors is likely to be much harder to obtain (Frazier et al., 2009; Rindfleisch & Moorman, 2001). This is because distributors are external independent entities, which makes information exchange between producers and distributors more complex and demanding, requiring explicit cooperation between channel members (Frazier et al., 2009; Palmatier, Dant, & Grewal, 2007). It is important to note that, according to U.S. Census Bureau (2010) data, industrial sales through indirect channels of distribution outnumber by three-to-one those that entail direct channels. Thus, by focusing primarily on the internal sales force as a source of customer-related NPD information, the literature not only underestimates the relevance of indirect distributors as a source of information in the industrial sector (Frazier et al., 2009; Stump, Athaide, & Joshi, 2002; Weber, 2001) but, provides little

in-depth knowledge about the ways in which distributors gather and process NPD-related information and how this can contribute to the enhancement of producers' PLM activities.

This article addresses this knowledge gap by focusing specifically on the independent distributor as a source of information and knowledge relevant to product innovation in the extended NPD process. The research reported here adopts a typological approach (Doty & Glick, 1994; George & Bennett, 2005) by which it is possible to identify recurring patterns in a given phenomenon—specifically, the different ways in which distributors process NPD-related information—and how these patterns affect a focal outcome—that is, how distributor-based information contributes to the producer's innovation effort.

As an underlying theoretical foundation, the organizational information processing theory (Galbraith, 1973; Tushman & Nadler, 1978) is adopted, because of the primacy of information in both the innovation and the channel literatures. In the innovation literature, the essence of NPD is viewed as an activity involving ongoing information acquisition, interpretation, sharing and usage, which ultimately leads to a viable new product offering (Clark & Fujimoto, 1991; Moenaert & Souder, 1990; Zahay, Griffin, & Fredericks, 2011). In the channel literature, information is also seen as the key resource that is processed and exchanged among channel members to ensure efficient and effective market coverage for a product, as well as to build working relationships (Coughlan et al., 2006; Mohr & Nevin, 1990). This article combines deductive and inductive approaches to typology development, as it builds on both the extant literature and on the results of an empirical investigation. The exploratory study entails 14 semi-structured interviews with managers of North American industrial manufacturing and distribution companies.

Consistent with information theory, four distinct distributor-based, information-processing-during-PLM scenarios are identified. Specifically, post-launch NPD activities can involve distributors as simple "problem informers" where they transmit basic information about customer needs to producers; or as "solution

informers" where they provide actual ideas about how the customer's problem may be solved. They may also become more actively involved as "solution managers" where they act as quasi brokers connecting the customer's problem with a specific producer's solution; or as "solution implementers" where they proactively undertake the product modification needed to address the problem.

The research contributes to both theory and practice by enriching extant knowledge about the channel and product management interface (Rosenbloom, 2013). From a scholarly standpoint, the typology provides valuable details about how distributors function as part of the post-launch PLM activities of firms and thus broadens the scope of how distributor contribution to innovation is viewed (Biemans, 1991; Song & Zhao, 2004; Yoon & Lilien, 1988). It also responds to the call in the NPD literature for a better understanding of PLM (Kahn, Barczak, & Moss, 2006; Tyagi & Sawhney, 2010); this, by expanding on the different types and levels of contribution coming from external channel partners. From a managerial standpoint, producers can use the typology to identify different types of information about innovation coming from their distributors. Together, these contributions allow for a better understanding of how distributors can benefit the innovation effort of producers through their information processing activities.

2.2. Towards a Typology of Distributor Contribution to Innovation

The management literature portrays organizations as information processing systems. According to organizational information processing theory (Galbraith, 1973; Tushman & Nadler, 1978), organizations interact with their environment by means of information as a mechanism for reducing uncertainty about various organizational tasks or activities (Daft & Weick, 1984; Tushman & Nadler, 1978). Information processing has also been applied to the study of inter-organizational scenarios, such as supply chains and distribution channels (Bensaou, 1997; Hult, Ketchen Jr, &

Slater, 2004), where relationships between channel members—such as producers and distributors—are presented in terms of the information that they process and exchange (Mohr & Nevin, 1990). Beyond the initial focus on organizational structure design (Galbraith, 1973; Tushman & Nadler, 1978), the application of organizational information processing theory has been extended to investigate a variety of activities, including NPD where it occupies a prominent role due to the intensive nature of information processing during this activity (Kleinschmidt, de Brentani, & Salomo, 2010; Moenaert & Souder, 1990; Tatikonda & Montoya-Weiss, 2001). Not only is innovation seen as an iterative information processing activity, but information itself is considered to be the central resource in every NPD activity, from initial idea generation, to design, testing and launch, and to the ongoing activities involving product improvements and adaptations during the PLM phase (Ausura et al., 2005; Tyagi & Sawhney, 2010; Zahay et al., 2011). In line with this, in the current research, distributors are seen as information processing systems (Hult et al., 2004; Tushman & Nadler, 1978) that are relevant for producers' post-launch NPD activities.

Using information processing theory to connect the channel and the innovation literatures, the goal of this research is to determine whether and in what way the multiple activities performed by distributors during post-launch—from provision of customer feedback to execution of technical support—entail different scenarios of NPD-related information processing. This goal is achieved through the development of a typology of distributor NPD-related information processing activities during PLM. Typologies allow for the identification of "[generalized] pathways through which particular types [of organizational behaviors] relate to specific outcomes" (George & Bennett, 2005, pp. 235-236). In other words, typologies further qualify patterns in organizational behaviors whose differences can be captured by a unique combination of attributes that lead to relevant outcomes (Doty & Glick, 1994). In this study, the relevant organizational outcome is distributor contribution to producers' PLM through NPD-related information.

2.2.1. Post-launch PML Activities and Distribution

A substantial part of the NPD literature is focused on describing the stages, activities and decisions that developers undertake in order to define, design and launch a successful new product (e.g., Cooper, 2001; Henard & Szymanski, 2001; Urban & Hauser, 1993). At the same time, there is growing interest in looking at the activities that occur after the initial product launch and that are necessary to ensure the long term success of the product (Kahn et al., 2006; O'Connor, 2005). In fact, the launch of a new product can be seen as the beginning of a much more extensive NPD process that includes the PLM phase (O'Connor, 2005; Urban & Hauser, 1993; Wheelwright & Sasser Jr, 1989). As a key post-launch phenomenon, PLM consists of continued NPD during which companies "[change] the features and benefits of the product […] to maximize the profits obtainable from the product over its lifecycle" (PDMA Glossary 2005, p. 602). During PLM, important activities entail: tracking customer satisfaction or problems, monitoring product reinventions or changes introduced by competitors, and observing product usage patterns and maintenance (Millson & Wilemon, 2002; Urban & Hauser, 1993). Typically, these activities lead to the introduction of incremental new products, involving modifications, adaptations, improvements and added features (Ausura et al., 2005; Thölke, Hultink, & Robben, 2001; Urban & Hauser, 1993).

During these later NPD process stages, producers often interact with distributors in two important, but interconnected, ways: through traditional channel functions and through information-processing that can be linked to NPD (Coughlan et al., 2006; Hult et al., 2004; Yoon & Lilien, 1988). As regards the traditional channel functions, distributors perform physical distribution, logistics, marketing, personal selling, financing, customer service and technical support (Anderson & Anderson, 2002; Coughlan et al., 2006; Pappu, 2005). But, as a by-product of these traditional channel functions, distributors end up processing a substantial volume and variety of information, some of which can be highly relevant for PLM activities (Coughlan et al., 2006; Frazier et al., 2009; Pimentel Claro & Oliveira Claro, 2010). Information

processed by distributors is multifaceted and includes both tactical and strategic aspects, as well as market and technical data (Frazier et al., 2009; Mudambi & Aggarwal, 2003). Thus, it can potentially be viewed as a key resource for both channel- and NPD-related information exchange (Coughlan et al., 2006; Frazier et al., 2009; Mohr & Nevin, 1990).

As noted above, in the NPD literature, distributors are largely valued for their traditional channel functions as part of their position in the downstream supply chain (Crawford & Di Benedetto, 2008; Urban & Hauser, 1993). In other words, distributors are primarily portrayed as external salespeople in charge of bringing already developed new products to market (Hultink, Griffin, Hart, & Robben, 1997; Song & Zhao, 2004), with emphasis on effective handling of logistics and appropriate levels of market coverage (Ausura et al., 2005; Urban & Hauser, 1993). Moreover, while some scholars do refer to distributors in terms of information processing activities, these are primarily concerned with distribution-specific marketing mix variables, such as promotion and pricing (Song, Di Benedetto, & Zhao, 2008; Song & Zhao, 2004). Their role as product-related information processors with the potential to contribute to NPD-related PLM activities receives only limited mention. For example, PLM 'best practices' do not mention distributors as relevant sources of product information for producers (Ausura et al., 2005); and, although a small number of authors refer to distributors as potential contributors to the product variable, such references tend to be nonspecific. For example, Weber (2001) states that information shared by distributors can increase product quality; Song and Zhao (2004) state that producers' innovation activities "can benefit from distributor's expertise in consumer, market and competitive information" (p. 59); and distributors are occasionally mentioned as an idea source for new products (e.g., Crawford & Di Benedetto, 2008; Lonsdale, Noël, & Stasch, 1996). Thus, while suggesting that there might be a NPD-related role for distributors, these statements contain a paucity of details about how this product-related information is processed or linked to the traditional launch and post-launch activities performed by distributors.

A broader review of the literature also provides some insights, albeit often indirect, about the potential for product-related activities that are or can be performed by distributors. Much of this literature, however, remains at the level of the check-list or simple enumeration. For example, discussions of new product launch often include distributors as one of the sources of customer feedback regarding product acceptance and/or problems (Crawford & Di Benedetto, 2008; Di Benedetto, 1999; Pimentel Claro & Oliveira Claro, 2010), or as an implementer of minor product adaptations to meet local requirements (Stump et al., 2002; Ulrich & Eppinger, 2004). Distributors are also mentioned as active partners of producers when they participate in customizing and/or integrating products and services in response to customer needs (Anderson & Anderson, 2002; Davies, Brady, & Hobday, 2007; Tuli, Kohli, & Bharadwaj, 2007). Finally, because distributors often provide customer technical service and support on behalf of producers (Coughlan et al., 2006; Pappu, 2005), one can infer a product-related role as a result of this total offering completion activity. What is important to note from these examples is that they all deal with some degree of acquisition, interpretation and even usage of product-related information on the part of distributors that could benefit producers' PLM activities.

In sum, as suggested although not adequately detailed in both the NPD and the Marketing literature, many of the "traditional" distributor activities appear to hold the potential to contribute to NPD during the post-launch, PLM, phase; this, through the information they have access to and process both in terms of customer feedback and ideas for relevant product changes and reinventions (Millson & Wilemon, 2002). This suggests that distributors—and not necessarily only producers—are in a position to engage in important types of NPD-related information processing during PLM. But, given the nebulous nature of past references to distributor involvement in NPD, as well as the results of the exploratory research presented here, it is very likely that not all distributors engage in these activities and process the related information in the same manner. Some scenarios—for example, when distributors provide technical support or product customization—call for acquiring, interpreting, and using a relatively broad range of market and technical information; while other situations—

for example, when distributors limit their input to providing direct customer feedback—might entail a simple gathering, listing and transferring of basic data. In this paper, it is advanced that the elements of the organizational information processing framework, such as the complexity of the task and the information processing competence of the distributor, are highly relevant for describing a typology of NPD-related information processing activities and explain the differences in types of behavior.

2.2.2. Information Processing Activities

Information processing consists of a sequence of activities involving information acquisition, interpretation, transmission, storage, retrieval and usage (Choo, 2002; Huber, 1991). The starting point in any information process is an *information need*. This can be the result of an emerging problem, an uncertainty, an ambiguity or a forthcoming decision (Choo, 2002; Day, 1994). In the context of PLM, producers may establish structured timelines for product improvement decisions, while distributors often face product-related problems on a less planned basis—for example, when customers do not buy a product due to concerns about usage problems or fit with their operations. To address this information need, companies engage in *information acquisition*, where data are collected from relevant stakeholders (Frishammar & Åke Hörte, 2005; Huber, 1991; Moorman, 1995). The NPD literature has a long-standing tradition of underlining the importance of information acquisition from internal and external sources (Cooper, 2001; Zahay et al., 2011). *Information interpretation* follows by giving meaning to the information that was gathered (Daft & Weick, 1984; Huber, 1991; Hult et al., 2004). Next, *information transmission* consists of sharing the interpreted information with potential users (Frishammar & Åke Hörte, 2005; Huber, 1991). This is a crucial activity as it is through sharing that information becomes relevant (Frishammar & Åke Hörte, 2005; Ottum & Moore, 1997). The activity that follows is *information storage* (Choo, 2002); this, for varying amounts of time, depending on whether or not the information is immediately usable (Choo, 2002; Day, 1994). The final activities consist of *information retrieval* and

usage, where the stored data is accessed and deployed to make decisions (Moorman, 1995; Veldhuizen, Hultink, & Griffin, 2006). Information usage can take the form of actual or potential changes in organizational activities (Daft & Weick, 1984; DiBella, Nevis, & Gould, 1996; Huber, 1991). In the NPD context, this could mean that an actual, or potential, change in a product is considered as a result of the information coming from distributors.

2.2.3. Information Processing as a Contingency Framework

This research focuses on two key factors that are considered to be contingencies in terms of the way in which the aforementioned information processing activities unfold: (1) complexity of the task and (2) information processing competence. These factors are related to a key tenet of information processing theory, namely that organizations face different levels of uncertainty in the tasks they perform and that they have limited information processing capacities (Galbraith, 1973; Tushman & Nadler, 1978). This is supported by Simon's (1982) model of "bounded rationality" where individuals—and, by extension, organizations—are viewed as facing tasks of different levels of complexity with limited information processing capacities. These two factors impact how information processing occurs and are discussed below in relation to the focus of this study—that is, NPD-related information processing by distributors during PLM.

2.2.3.1. Complexity of the NPD Information Processing Task

The first contingency factor addressed in this study is the complexity of the task. The information processing literature underscores how increasing task complexity leads to requirements of greater and deeper information processing on the part of both individual and organizational entities (Campbell, 1988; Draft & Macintosh, 1981; Payne, 1976; Tushman, 1978). In effect, organizations must deploy more effort in gathering, interpreting and using information when dealing with more complex tasks (Clark, Abela, & Ambler, 2006; Kirsch, 1996). Similarly, according to the innovation

literature, complexity of new products or projects is found to lead to more information processing, which in turn translates into longer development times (Griffin, 1997; Kim & Wilemon, 2003). In their synthesis of information processing and innovation literatures, Tatikonda and Rosenthal (2000) underline how the complexity of a new product significantly impacts how companies engage in the development process. Higher complexity levels of NPD projects may require more effort spent on combining and making sense of the information gathered (Chapman & Hyland, 2004; Kim & Wilemon, 2003).

In the current study, the complexity of the task is defined in terms of the objective characteristics of the task itself (Campbell, 1988). Consistent with Novak and Eppinger (2001)'s definition of product complexity[1], this study views the complexity of the task as *the number of product components affected by the problem encountered by distributors and the extent of interactions between these components*. In his comprehensive analysis of organizational information processing activities, Choo (2002) observes that problems at the origin of information processing can be categorized along a continuum ranging from simple to complex. In this paper, this continuum is used as a basis to categorize product-related problems occurring during post-launch. When such problems concern only few parts, distributors can easily acquire and make sense of the information. When there are a large number of components, however, and especially if these interact with each other or with other products, the situation becomes more challenging. For these more complex problems, more information needs to be gathered and its interpretation may require significant efforts, making information processing more difficult. At higher levels of complexity, distributors may also need to engage in more exchanges with producers and customers and even share some activities with producers to make sense of the information gathered and successfully address the problem.

[1] The third dimension of Novak and Eppinger's (2001) framework, degree of product novelty, is not retained in this research as post-launch PLM activities typically involve only incremental innovation (Urban and Hauser, 1993).

2.2.3.2. NPD-related Information Processing Competence

According to Tushman and Nadler (1978), information processing capacity is the organizational ability to use new or additional information within the task performed by the organization. This ability increases with the level of preexisting knowledge held by the information processors (Cohen & Levinthal, 1990; Turner & Makhija, 2012). Moenaert and Souder (1990) explore this issue in the NPD context and show how the increasing level of knowledge and competence of information processors positively impacts the quantity and quality of information gathered, interpreted and exchanged within multifunctional teams. Also at the inter-organizational level, research on input to NPD from external partners (e.g., customers and suppliers) shows that high levels of competence and knowledge translate into more valuable information, contributing positively to producers' innovation efforts (e.g., Cousins, Lawson, Petersen, & Handfield, 2011; Song & Thieme, 2009; Eric von Hippel, 1978).

According to Mudambi and Aggarwal (2003), distributors have two key types of knowledge—market and technical—and can potentially process either or both types of information during PLM activities. Thus, taking into account the aforementioned link between distributor knowledge level and contribution to innovation, information processing activities performed by distributors can be expected to be contingent on their competence in terms of two key dimensions of NPD: market input and technological input (Clark & Wheelwright, 1993; Zahay et al., 2011). *Market knowledge* is unanimously associated with distributors in the marketing literature (Kohli & Jaworski, 1990; Kohli, Jaworski, & Kumar, 1993) both because of their proximity to the end market and their expertise about questions of market demand, customer needs and wants, and competitor NPD-related activities (Mudambi & Aggarwal, 2003; Song & Zhao, 2004). But, some distributors also have *technical knowledge* (Mudambi & Aggarwal, 2003). They know about the product's physical capabilities and technical specifications, and also have access to information on how the product is used by customers and the problems they incur (Mudambi &

Aggarwal, 2003). Their information about product usage is gained from outside producers' walls, typically through direct provision of technical support and troubleshooting for customers facing problems with producers' offerings (Mudambi & Aggarwal, 2003; Pappu, 2005). While less often mentioned in the literature, this second competence can enhance distributors' NPD-related information processing by adding a technical dimension to the traditional market-based one. In effect, some distributors have both a marketing and a technical knowledge base, and thus are in a position to acquire, interpret and even use the necessary information to actually solve a customer's problem, without input from the producer. These types of distributors can be defined as having a "high" NPD-related information processing competence. At the other end of the spectrum, there are many distributors who are primarily "marketers". They have only limited technical competence and are focused primarily on market-related aspects in their information processing. In terms of input to the NPD process, these types of distributors are defined as having only a "basic" NPD-related information processing competence, limited to transferring customer feedback to producers.

In sum, the literature shows either directly or indirectly that distributors do appear to perform a variety of product-related activities during the PLM phase of NPD. A key byproduct of these activities is information of a market and/or technical nature that has the potential to positively contribute to producers' NPD during the PLM phase. Using the organizational information processing contingency framework as a basis, the current study develops a model that links differences in the level of NPD-related information processing undertaken by distributors to varying levels of task complexity and information processing competence. It is unclear, however, in what way the interplay between these two factors affects the depth and the nature of specific distributor NPD-related information processing activities. It might be that, regardless of the level of competence, the extent of information processing depends on the complexity of the problem. For example, simple problems could be handled even by distributors with low levels of information processing competence, while more complex problems might be tackled only by those with a full set of information

processing competencies (i.e., both market and technological knowledge). Therefore, additional questions are: How do distributors go about engaging in information processing during PLM; and what are the differences in the resulting information and its impact on producers' innovation activities during PLM? In this article, we address these questions by developing a typology of distributor NPD-related information processing activities during the post-launch product lifecycle management phase.

2.3. Methodology

In this study, a typology of distributor NPD-related information processing is developed by combining deductive (theory-based) and inductive (field-based) approaches (George & Bennett, 2005; Short, Payne, & Ketchen, 2008). The information gathered from the literature is complemented with evidence from an empirical exploratory study to address the questions of to what extent and how distributors process product-related information during the PLM phase of the NPD process. Given the limited evidence in the literature and the lack of focus of past research on this specific topic, such an exploratory approach is justified (Miles & Huberman, 1994; Patton, 2001). Semi-structured interviews were used to "yield in-depth responses about people's experiences, perceptions, opinions, feelings, and knowledge" (Patton, 2001, p. 4), which were considered to be of particular value for gaining a rich description of each of the scenarios developed in this typology, as recommended by Doty and Glick (1994).

The interviews targeted managers of industrial equipment and supply companies operating in North America. Both producer and distributor companies were included in the study to explore the perceptions of the two sides of the marketing channel relationship. Respondents from producing and distributing companies are identified in this study by "P" and "D", respectively. Industrial equipment and supply sectors were chosen for the fieldwork because information sharing dynamics between producers and distributors have been shown to be highly relevant in these sectors (e.g., Frazier et al., 2009). Prospective respondents were

identified through a combination of public lists (NAICS code 4238: machinery, equipment and supply merchant wholesalers) and business contacts available to the research team. As incentives, prospective respondents were assured anonymity and promised an executive report on the study. This executive report was also used to validate the conclusions of the research with participants (Miles & Huberman, 1994).

After six months of developing contacts with 50 companies, data from 14 usable in-depth interviews (each ranging from 25 to 75 minutes) were analyzed. The study used a key informant approach (John & Reve, 1982; Kumar, Stern, & Anderson, 1993), with interviewees holding positions of president, vice-president or senior manager, all with significant work and decision-making experience in their respective fields. Interviewees were knowledgeable about the NPD practices carried out by their organizations (when addressing producers) or about product/NPD-related interactions with producers (when addressing distributors). Except in the case of one producer-distributor dyad (P2 and D10), the channel relationship was reflected in the opinion of only one respondent. Table 2.1 provides a summary of the interviewees and of selected characteristics of their companies (e.g., company size, sector, market coverage, type of product offering). Due to the confidentiality agreement signed with participants, all company names are disguised and replaced by generic terms (e.g., ABC or XYZ).

Table 2.1 : Description of Respondents

Label	Position	Industry Sector (Channel Function)	Employees	Market Coverage	Duration
P1	Business Development Executive	Electrical and Electronic (Producer)	51-200	International	95 mins
P2	Vice-President, Sales	Biometrics (Producer)	201-500	International	60 mins
P3	President	Diamond Tools (Producer)	10-50	International	65 mins
P4	Vice-President, Test and Measurement Division	Telecom Equipment (Producer)	>1500	International	35 mins
P5/ D10	Vice-President, Security and Identity, Chief Security Officer	Security Equipment (Producer and Distributor)	51-200	International	40 mins
D1	Associate Partner, Co-Founder	Electrical Equipment (Manufacturing Agent)	5-10	National	45 mins
D2	Territory Manager	Safety and Industrial Equipment (Manufacturing Agent)	11-50	National	45 mins
D3	President	Industrial Equipment and Supplies (Manufacturing Agent)	5-10	National	62 mins
D4	President	Industrial Printing Equipment & Supplies (Distributor)	< 5	Regional	65 mins
D5	Territory Manager	Woodworking Equipment (Wholesaler)	51-200	National	40 mins
D6	Technical Director	Product Identification Equipment and Supplies (Producer and distributor)	51-200	National (US and Canada)	95 mins
D7	Vice-president, Projects, Operations & Innovation	Pumping equipment (Producer and Distributor)	51-200	National	25 mins

Label	Position	Industry Sector (Channel Function)	Employees	Market Coverage	Duration
D8	Branch Manager	Maintenance Supplies (Wholesaler)	1001-2000	National (US and Canada)	70 mins
D9	Vice-President, Marketing	Telescopic Machinery (Distributor)	51-200	National	50 mins

As a structuring tool for data collection, two interview-guides—one for each side of the channel relationship—were developed based on the existing literature. Respondents were first asked to provide general information about their company (e.g., history and organizational structure) and the markets in which they operate (e.g., local or international). Second, they were questioned about their indirect channel relationships and how NPD-related information was typically processed within these relationships. Whenever respondents mentioned NPD-related information processing activities involving distributors, probing questions about the NPD scenario, the type of information involved, and the information processing activities performed by distributors.

Interview data were content-analyzed according to qualitative data analysis guidelines (Miles & Huberman, 1994; Patton, 2001). The goal was to identify different information processing scenarios that exist as related to distributors' involvement in post-launch activities and to characterize these in terms of varying levels of task complexity and information processing competence. After verbatim transcription, interviews were coded with Atlas-TI qualitative data analysis software, using a list of codes developed from the literature and integrated with emerging codes. These codes covered the different information processing activities (i.e., acquisition, interpretation, transmission, storage, retrieval and usage), as well as task complexity and distributor information processing competence. A code-check was performed to verify the reliability of the coding scheme. A trained independent judge coded a randomly chosen interview, comprised of 90 thought units, defined as a single idea expressed by the respondent across one or multiple sentences. The

resulting Cohen's Kappa was 0.795, indicating substantial agreement among coders (Landis & Koch, 1977). Disagreement was resolved through discussion.

After coding, the data were further reduced into matrices to facilitate analysis and interpretation. Over 30 instances of new product-related information processing involving distributors emerged from the data. Each instance was initially characterized in terms of: level of task complexity, information processing competence, and information processing activities. Later, groups of instances were developed according to their similarities in terms of these three factors. After several iterations between literature and data, a set of four distinctive NPD-related information processing types emerged: *Problem Informer*, *Solution Informer*, *Solution Manager*, and *Solution Implementer*. The labels are evocative of the type of information processing conducted by distributors under different combinations of task complexity and information processing competence. It should be noted that the frequency of each type is not representative of how often the specific scenario occurs in the universe of the phenomenon (George & Bennett, 2005). Rather, this exploratory research is aimed at mapping all the different pathways of NPD-related information processing by distributors. The four types are further detailed below.

2.4. Findings

In the fieldwork conducted, respondents mentioned several instances of NPD-related information processing performed by distributors. Within each instance, it was possible to distinguish varying levels of task complexity and NPD-relevant information processing competence of distributors. Further, differences were found in the nature, depth and sequence of information processing activities associated with distributors' involvement in PLM activities.

Distributors were found to engage in information processing in reaction to product-related problems encountered during the post-launch stage. These problems constituted the common *information need* stage at the origin of any information

processing and typically arose when the products sold were not in line with customer requirements, competitive standards, or expected performance. Some type of product modification was usually required in order to accommodate the underlying problem situation. In the examples provided by respondents, these problem-related triggers to information processing took a variety of forms, including: obstacle blocking the actual sale of a product (D5; D9), a recurring customer request or formal demand for a specific product feature (D1; P1; P5), a new (improved) product introduced by a competitor (P3; D1; D7), or a product usage problem experienced by the customer (D6; D9; D8).

Through a detailed analysis of each example, one or more of the information processing stages—i.e., information acquisition, interpretation, transmission, storage, retrieval and usage—could be distinguished. For example, *information acquisition* activities were described by D4 in the following terms: "when we meet our customers, we gather information about their needs, about their problems, and about which products they would like, etc."; *information usage* activities were described by D9 as: "based on the need we had identified, we [the distributor] made the modification to the platform of the 'telehandler' ourselves, and the customer really liked it". Taken together, these elements support the appropriateness of the information processing framework to gain insight to distributors' contributions to producers' NPD activities during PLM.

2.4.1. Interplay of Task Complexity and Information Processing Competence

While the literature considers task complexity and information processing competence as key contingencies impacting the information processing that is undertaken by organizations, the joint effect of these two factors on NPD-related information processing dynamics is less defined. In the current study, the effort to develop and describe logical distributor NPD-related information processing scenarios only made sense when both factors together were included. Thus, the

combination of low/high levels of complexity of the product-related task and basic/high levels of NPD-related information processing competence of distributors led to a typology of four distinct information processing types. These are described in detail in section 2.4.2.

The first step in developing a typology was to identify and describe each factor in terms of low versus high situations. Starting with *task complexity*, low/high levels were clearly evidenced in the examples detailed by respondents. In line with the definition by Novak and Eppinger (2001)—i.e., number of product components involved and extent of their interaction—some instances described by respondents evidenced scenarios in which only one or a small number of independent components (i.e., often involving a modular design where there is limited interaction between product components) required a modification. Examples include the need to modify the resistance level of a label holder stand (D6), or the need to attach an identification label on a piece of construction equipment (D8). Both examples entail product modification tasks that involve only one or a few relatively simple components with no interaction with the rest of the product. These types of product-related information processing tasks were identified as *low complexity* tasks. The findings in this study also provide evidence of much more complex task scenarios involving several product components simultaneously (i.e., an integral design scenario where the modification of one component impacts other components and/or the overall functioning of the product) or where the product is operated in conjunction with other products. Examples of these include a facial recognition equipment-plus-software package that needed to be customized (i.e., several components, having major interactions with the rest of the product; D10); or the integration of multiple pieces of testing equipment and accompanying software to test signal strength for a telecommunication operator (P4). These types of product-related information processing tasks were identified as *high complexity* tasks.

The second contingency factor, *information processing competence*, could also be coded as either low or high based on the interview data. As noted in the

theoretical discussion, the capacity to handle various types of NPD-related information during post-launch depends on both the market and technical competence of distributors. This two-dimensional competence is necessary given the need for both market and technical competence in NPD-related information processing (Clark & Wheelwright, 1993; Cooper, 2001). According to the findings, while distributors show fairly similar levels of market knowledge, they differ distinctly in terms of their level of technical competence. This makes sense, given that distributors are first marketing intermediaries. It also indicates that it is the technical component that determines if and to what extent these organizations become proactively involved in NPD-related information processing activities. As evidence of distributors with high(er) levels of technical competence, respondents mentioned: "following manufacturers' technical training" (P3; P4; D2); having "technically trained sales representatives on staff" (D1; D3; D6); and the existence of "our own technical support department" (P5; D6; D9). Distributors exhibiting only limited development of technical competencies were identified as displaying *basic information processing competence*, while those with substantially more sophisticated capabilities (i.e., intensive producer training, technically-oriented sales and support staff) were considered to have *high information processing competence*. Because technical competence goes beyond what is required of distributors in the typical marketing channel relationship, distributors are likely to commit scarce resources to the development of this competence only if, without it, they cannot achieve their objectives—that is, serve their markets effectively or gain a more sustainable advantage over competitors. This sense of urgency that leads to the development of technical competence by distributors is evident in the following quotation by D9:

> We have 12 technicians in our own workshop, another three are on the road dealing with customers, and about eight technicians in another division about 200 km away…On construction sites, if the telescopic machine breaks down, it must be repaired immediately…it becomes as essential as a hammer. If you do not have a hammer on the construction site, you just buy one; you cannot work without it! This is why we developed a strong technical support arm as part of our business.

As noted above, according to the findings, the two contingency factors of task complexity and technical competence are closely associated when it comes to developing a typology of distributor NPD-related information processing scenarios. In other words, the level of distributor technical competence has a major impact on how distributors handle product-related problems of varying levels of complexity. In this study, four distinct NPD-related distributor information processing types were identified: (1) *Problem Informer* (type 1), (2) *Solution Informer* (type 2); *Solution Manager* (type 3), and (3) *Solution Implementer* (type 4). At one extreme, when task complexity is high and distributors have only basic levels of technical competence, they simply acquire information about product-related issues and transmit this to producers for action (type 1). In contrast, at the more elaborate levels, the combination of information processing competence and task complexity leads to more proactive information processing scenarios where distributors either recommend (type 2), manage (type 3) or actually implement the solution to the problem (type 4). Each of these scenarios is summarized in Table 2.2 and detailed below.

Table 2.2 : A Typology of Distributor Information Processing during Post-Launch Lifecycle Management

Type	Type 1-Problem Informer	Type 2-Solution Informer	Type 3-Solution Manager	Type 4-Solution Implementer
Task Complexity	High	Low	High	Low
NPD-related Information Processing Competence	Basic	Basic	High	High
Sequence of Information Processing Activity	Acquisition $_{D}$ → Interpretation$_{D}$ (market)→ Transmission $_{D}$	Acquisition $_{D}$ → Interpretation$_{D}$ (technical)→ Transmission $_{D}$	Acquisition $_{D}$→ Interpretation $_{D}$ → Transmission $_{D}$ → Storage $_{P, D}$ → Retrieving and Usage $_{P, D}$	Acquisition $_{D}$ → Interpretation $_{D}$ → Storage $_{D}$ → Retrieving and Usage$_{D}$ → Transmission $_{D}$
Outcome	Product-related Information with Market Dimension	Product-related Information with Technical Dimension	Tangible Information, Modification jointly developed with producers	Tangible Information, Modification developed by distributors
Example	D7 identified the introduction of pumps with three impellers by competitors as a major threat to the sale of the two-impeller model. The producer eventually launched its own three impeller model.	D5 suggested the introduction of a modem-internet connection to allow for the remote control of sawing equipment; this was asked for by customer.	D6 initiated and managed a labeling equipment solution project, involving a modification that eventually became a standard feature on future product generations.	D9 modified the cover of a motion sensor of a telescopic handler for improved protection during adverse weather conditions. This feature became standard in later product generations

Lower script letters indicate, respectively: D = activity performed by Distributors; P = activity performed by Producers

2.4.2. Typology of Distributor NPD-related Information Processing

2.4.2.1. Type 1: The Problem Informer

The simplest form of NPD-related information processing involving distributors is captured in the scenario labeled the *Problem Informer*. This type of distribution intermediary primarily gathers information about new product-related problems and transmits this to the producer for potential action. The type 1 situation is relevant in cases where product-related tasks are of a complex nature, involving multiple components and interrelationships, and where the distributor is purely a 'marketer' with only a basic level of technical competence. In these scenarios distributors focus primarily on their function as commercialization partners and deploy their market-based competence by providing producers with what they believe to be important information for ensuring the success of the product during the PLM phase. The following quotation by D1 is a good representation of this type 1 NPD-related information processing:

> We [distributors] are here to take the pulse of the market and bring it to producers. We tell them that there is a problem for this kind of equipment…customers regularly mention the same concern…and that something should be done to solve it. We ask the manufacturer if it is possible to develop something. There would be more sales potential if it is fixed, given the number of requests we receive. Companies are quite open to listen to us and try to develop something accordingly.

Once a problem is identified, these distributors often engage in further *information acquisition* by gathering market-based data relevant to the specific product-related issue in question. In our study, the information gathered by distributors often was useful in identifying the causes of the problem: for example, changing customer needs (P5; D5), recent competitive actions (P3), or changes in regulations (P1; P2; D1; D3). Type 1 distributors also perform some *information interpretation* in that they combine the market-based information with specific

product characteristics. This information is sometimes *stored* for periods of time before it is retrieved and transmitted to producers (this helps distributors determine if indeed it is a problem requiring producer attention). Respondents did not mention formal mechanisms of information codification, but mostly informal ones (i.e., discussions, oral communication, etc.). *Information transmission* occurs when distributors perceive the product-related problem to be extensive or pressing. The sense of urgency can be present from the initial information processing stage or can arise only after several iterative cycles of information acquisition, interpretation and storage. The latter situation occurs when distributors only recognize that there is a problem after recurring incidents during sales or after-sales support activities (P5; D1). For type 1 cases, distributor involvement ends with information transmission; there was no evidence of *information usage*.

In sum, type 1 distributors adopt an essentially passive posture as "problem informers" by identifying and gathering information from the marketplace about product-related problems, which they then transmit to producers for action. They focus primarily on their market-related competence and act as an information source, leaving to producers the task of dealing with the technical aspects of the product-related problem.

2.4.2.2. Type 2: The Solution Informer

A second type of distributor NPD-related information processor identified in this study is labeled the *Solution Informer*. Here, the information processing cycle is more developed in that distributors not only collect information about the product-related problem, but they also formulate ideas about potential solutions. Type 2 cases are typical when distributors deal with product-related tasks that are low in complexity and when they themselves have both types of competencies—market and technical—with the latter at a "basic" level. In this scenario, distributors become more extensively involved in information processing and make the move towards solving

relatively simple problems. In effect, distributors go beyond the "problem informer" status by also recommending logical courses of action to address the situation.

In terms of information processing activities, the first stage, *information acquisition,* is performed in a similar fashion to what occurs in the type 1 scenario. The results indicate, however, that in at least two of the stages that follow, "solution informers" become more actively involved. One of these is *information interpretation.* Given the low task complexity—that is, few product components and interactions—distributors combine their knowledge of market with their basic technical competence. They analyze and make sense of the technical dimension of the product-related problem and come up with potential solutions. After interpretation, *information storage* is similar to type 1. But, in the *information transmission* stage, important differences emerge. This is in the richness of information that distributors provide to producers, going substantially beyond the simple market-related data transmitted by type 1 distributors. Type 2 distributors are termed "solution informers" because they not only alert producers about product-related problems, but in addition offer useful ideas about how these might be solved technically. An example is provided by D5:

> In one specific case, a customer wanted the sawing equipment he was purchasing to be remotely controlled. Even though we made the sale without that feature, we thought that adding a modem-internet connection would address that need. We shared this idea with the manufacturer and it was incorporated as part of the next product generation. Thus, it can happen that for the subsequent machines the manufacturer will add a feature we suggested. When this happens, these are improved pieces of equipment which are easier for us to sell.

2.4.2.3. Type 3: The Solution Manager

A third type of NPD-related information processing scenario, labeled the *Solution Manager,* includes cases where there is both a high level of task complexity and an above average level of technical competence on the part of distributors. Type 3 situations typically involve products where components are interrelated and cannot

not be easily modified or adapted without impacting the functioning of other elements or the product as a whole. For example, interviewees spoke about clients who needed customized integration of particular products and services. D8 described the need for specialized rail equipment to move heavy, but fragile, pallets of chemical products inside a production plant. P5 talked about a telecom firm and its need for customized signal testing equipment-plus-software. These are complex products involving specialized technologies with multiple interrelated components. Therefore, although type 3 distributors are rated as having a high level of technical competence, it is important to keep in mind that they are not expert producers and do not attempt to fully address these complex product problems on their own. In this scenario, producers are an integral part of the solution in that they ultimately perform the required product modifications. Given their strong market-plus-technical competence, however, these distributors play a much more sophisticated role than that of the "problem informer" and the "solution informer". Indeed, high technical competence, which is complemented with proximity to both producers and customers, leads to a scenario where some distributors become active project managers (D3), going substantially beyond informing about to actually coordinating the solution provision process. Distributors who are "solution managers" show a significant level of involvement in all stages of NPD-related information processing, as documented by D3:

> We sit down with customers to determine what their needs are. Based on these needs, we start to see what we can do with the individual components we offer or with a combination of products and services…an assembled solution. We also determine the resources required to address these needs. Once we have a better understanding, we turn to manufacturer and, depending on the size of the project, we provide the facts, the detailed needs and sometimes even the resources required to address the issue. While the manufacturer starts working on the solution, we take charge of all the back and forth between customer and producer...At this point, the manufacturer's engineering department starts working on the actual solution…but we are in charge of the deployment at the customer site.

Describing this scenario in terms of information processing activities, once the product-related problem is identified, type 3 distributors deploy substantial *information acquisition* efforts. This stage can entail an exploratory phase for the purpose of gaining an in-depth understanding of the needs of customers and the product-related issues at stake, both in term of market and technical dimensions. The activity often involves repeated exchanges with customers—more numerous than those noted for type 1 and 2—due to the greater complexity of the product-related task as well as the distributor's ability to cope with technical issues. During the *information interpretation* stage, "solution managers" delineate specifications for the solution to be developed in terms of products, services and level of customization needed. Distributors compare the information gathered with the competencies, products and services available both in-house and through producers. D8, for example, spoke about integrating information from several "partners" involved in providing the solution for the specialized rail equipment: the rail producer, the storage equipment provider and the company in charge of developing software controls. Once specific producers are involved, there is ongoing *information transmission* between the companies (P4, D3, D6), often involving repeated cycles of information acquisition and interpretation, and continuing throughout the solution provision process. With regard to *information usage*, type 3 distributors differ from type 1 and type 2 as they become intimately involved in the implementation of the product modification, albeit as managers of the process. In effect, information is *used* by the producer when developing the product component(s), and also by the distributor when overseeing the integration of the customized product-service package at the customer's site.

In sum, distributors who are "solution managers" are involved in all of the information processing activities from both a marketing and a technical standpoint. They not only identify the product-related problem and transmit this information to producers (as type 1), but they also interpret this information, perform integration activities and mediate the interactions among the stakeholders involved. In this

scenario, both distributor and producer take on an active posture with respect to the specific problem, each leveraging their respective competences. Thus, the solution provision involves a "quasi-partnership" with channel members becoming highly interdependent in terms of the information processing activities required for NPD.

2.4.2.4. Type 4: The Solution Implementer

A fourth type of NPD-related information processing emerges in cases of low task complexity but where distributors have relatively high levels of technical competence. In this scenario, *Solution Implementers* can be identified who, on becoming aware of a particular problem, go about actually implementing a solution—sometimes on a temporary basis—that facilitates the sale of the product or its post-sale support. In terms of information processing activities, similar to the other three scenarios, type 4 distributors are actively involved in *information acquisition* about product-related problems. Type 4 distributors, however, perceive a real urgency to address this problem when it might hinder a sale or cause a serious prejudice to the operations of a customer using the product. Respondents spoke about the importance to the firm of certain customers and/or the potential long-term financial damage if they did not immediately address a relatively simple product-related issue. Due to the high level of distributor technical competence, *information interpretation* leads to insights about potential solutions. In our study, respondents (P5; D6; D9) discuss how engineers, technical support/service personnel, or staff technicians become involved in making sense of the information gathered. These technically qualified people worked together to find a concrete and implementable solution to the problem. Differently from the three previous scenarios, type 4 distributors also become directly engaged in *information usage* by actually implementing a solution. Examples include: the slide added by D6 to a printer/labeler to accommodate round-shaped (as opposed to square) boxes used by the customer; or the cover applied by D9 to the motion-detection sensor in telescopic handling equipment to prevent freezing during winter. The resulting product modifications performed two functions: first, they

temporarily addressed the customer's problem; and second, they represented original improvements to the product. Before type 4 distributors implement their solutions, they may occasionally transmit some or all of the information to producers to ensure that the modification does not interfere with the rest of the product (D9). In most of the instances, however, the core of *information transmission* took place only after *information usage* (D4; D6; D9). A summary of this type of NPD-related information processing is provided by D9:

> A customer told us: "Although I like this platform for the telescopic handler, it would be very tiring to use on a constant basis as I will have to bend over every time. I'd like to be able to remove this barrier from the platform of the attachment." After getting assurance of purchase from the customer if we solved this problem, we started talking with our technicians about what we could do to modify the platform. The customer really liked the modification and bought the product!

In the "solution implementer" scenario, two features stand out. First, distributor involvement spans several NPD-related information processing stages—acquisition, interpretation, transmission and usage—and second, distributors adopt an active posture in regard to the product-related problem, by actually implementing the solution. Ultimately, once the information is transmitted to producers, it takes on an enriched tangible format through the product modification that has already been created by the distributor.

2.4.3. Outcomes of Distributor NPD-related Information Processing

Much of what distributors do when it comes to NPD-related information processing is for their own benefit. Alerting producers about product-related problems, suggesting, managing or actually implementing solutions all contribute to achieving their own objectives of sales and/or increasing their customer base. According to our findings, however, the information processed by distributors can also indirectly and directly benefit producers particularly during the product lifecycle management phase of the NPD process. For several producers who took part in the study (P1; P4; P5), product-

related information transmitted by distributors was found to have a positive impact by providing credible market-based ideas, shortening the NPD process, and potentially reducing the overall cost of PLM. As stated by P5: *"I think we would have come to this product modification anyways. However, the distributor accelerated this process as he put some pressure on us to develop the product modification."*

The findings show that the information resulting from all four scenarios has the potential for providing producers with a "direction for product improvement" (D6). While the input is often intangible and therefore requires substantial processing by the producer (as in the case of type 1 and type 2 information about problems and suggestions), in other cases the input to NPD is quite concrete (as in type 3 and type 4 scenarios where distributors play a proactive role in actually defining and/or implementing product changes). Notwithstanding the degree of intangibility, according to respondents from producer firms, this information is often stored by them—sometimes by sales personnel but more often by product managers—and analyzed for potential deployment during PLM activities. For example, some producers try to determine whether this input from distributors is directly applicable to making their current product line more successful. For other interviewees, distributor input takes on a more strategic flavor with the potential for contributing to the market and product-line objectives of the overall NPD program. For example,

> We take the idea brought by the distributor and try to see it in a broader perspective: how will the idea bring new sales? How it will add a new "flavor" to our product? How will it make us different from competitors? (P5)

> We told producer ABC about the modification we had made to their product [telehandler attachment]... later they started producing it as a standard item, which they now sell in other markets. (D9)

Further, some manufacturers view distributor input and the information they receive and store as an important part of their own marketing information system that is accessed during various stages of the NPD process. Depending on the depth of processing performed by distributors, this type of information can be useful to

producers during early NPD stages such as idea generation, and also during later stages such as product prototyping. This is evidenced in the following:

> Every year, we try to gather all the comments and ideas from our distributors on how to improve our products. So that when we start formulating ideas about these improvements, our product managers are aware of what our distributors think (P1)

> We told the producer ABC about this modification we made [to the platform for the telescopic handler]... Producer ABC found it very interesting and now they've started producing it as a standard product that they sell in other markets (D9).

Summing up, the fieldwork shows that both distributors and producers can benefit from distributor involvement in NPD-related information processing activities. Depending on the task complexity and distributor information processing competence, especially at the technical level, the findings suggest that a strong potential exists for a beneficial and complementary relationship between these two channel members in order to develop new products during the PLM phase.

2.5. Discussion, Contributions and Implications

The goal of this paper is to deepen our understanding of how, through different information processing activities, distributors contribute to the innovation efforts of producers during the product lifecycle management (PLM) phase of the NPD process. Two research questions motivated this study, namely to what extent and how distributors process product-related information during this post-launch NPD process phase. These questions were addressed by combining the insights from the innovation and channel literatures with findings from 14 in-depth interviews with managers of industrial distributor and producer firms. Based on this, a typology consisting of four distinct distributor NPD-related information processing scenarios was developed. The study makes a number of contributions and suggests some important implications for

managers involved in NPD. These, together with the limitations of the research, are discussed below.

From a scholarly standpoint, the research makes several *contributions*. First, it offers greater insight to the management of post-launch NPD through the integration of the innovation and the channel literatures (Song & Zhao, 2004; Weber, 2001; Yoon & Lilien, 1988). It supports in more substantial detail the statements in each of these two literatures of the potential of distributors in contributing to the NPD efforts of producers (Ausura et al., 2005; Crawford & Di Benedetto, 2008; Frazier et al., 2009; Weber, 2001). Second, the research not only supports Yoon and Lilien's (1988) contention that distributors contribute to producers' NPD activities, but is the first to document this activity in empirical terms by providing scenarios that describe how and under what circumstances this occurs. The results show that distributors play a much more extensive role in the NPD process than they have been credited with. Their input can go substantially beyond simply identifying customer problems or offering possible solutions during the idea generation stage; they sometimes get involved in the entire NPD process by acting as project brokers or actual solution implementers. Third, by using information processing theory (Tushman & Nadler, 1978) as an underlying model, the research provides specifics to the general statements or simple checklists found in the literature about NPD-related cooperation between distributors and producers (Crawford & Di Benedetto, 2008; Song & Zhao, 2004; Weber, 2001). This information-processing typology shows that there is no 'one-size-fits-all' pattern in distributor NPD-related activities during PLM. Rather, important differences are found in the information processing stages that distributors become involved in (i.e., information need identification, acquisition, interpretation, transmission, storage, retrieval and use), as well as in the type and depth of information provided, depending on the complexity of the product-related task and the distributor's competence in processing related marketing and technical information. Through this, the traditional view in the literature that distributors are primarily a source of market-related information (i.e., need identification and

information acquisition) is dissipated, as it appears that they often go substantially beyond the intangible level of gathering and providing information about product-related problems (type 1: *problem informer*). The findings indicate that some distributors also have technical competence (usually due to an urgency to respond to customer needs), which results in more complex scenarios involving several information processing activities. These distributors provide more concrete input by offering specific ideas about problem solutions (type 2: *solution informer*) or by becoming actively involved in the management of or actual modification of products (type 3: *solution manager* or type 4: *solution implementer*). For the latter scenarios, a link can be made with the "lead user" stream of research (Franke, von Hippel, & Schreier, 2006; von Hippel, 1986). Distributors acting as *solution managers* or *implementers* sometimes detect needs that are in advance of the majority of customers in a given market and help producers in achieving the higher benefits expected from addressing these needs. Distributor actions here can lead to new products with the potential for substantially broadening market applications or creating new markets. In sum, the research presented in this article responds to the invitation by Narus and Anderson (1986) to "turn industrial distributors into partners" (p. 55) by expanding the scope of how distributor contribution to innovation is viewed, and allows scholars to more thoroughly map the activities comprising the PLM phase of NPD.

The research also has important *managerial implications.* Notwithstanding the input from distributors, NPD is clearly the function of producers, and its role in maintaining a viable and profitable product portfolio is becoming increasingly important. The impact of technological advances, shortening product lifecycles and the need to succeed in the global market arena make continued innovation essential (Cooper, 2001, 2011). In most cases, the successful launch of an original new product must be followed up with a strong post-launch NPD program where product improvements, modifications and adaptations are introduced on a regular basis to ensure continued customer satisfaction, offset competitive offerings, and sustain a long-term competitive advantage (Ausura et al., 2005; O'Connor, 2005). This is

supported by recent studies showing that as markets become global, producers strive to balance global and local opportunities with their new product offerings (PriceWaterhouseCoopers, 2012). Based on this research, distributors are seen as contributing to this goal as key sources of information helping producers to adjust their PLM activities to take into account the specificities of local markets. Furthermore, according to the 2010 *BCG* and *BusinessWeek* Global Innovation Survey, minor changes to existing offerings were judged as "important" or "very important" by 80 percent of companies (Andrew, Manget, Michael, Taylor, & Zablit, 2010); and, according to Adams and Boike (2004), incremental new products (improvements and modifications) and additions to existing lines represent at least 60% of all new products launched by firms. While these types of new products are typically the most successful in the industrial sector (Hultink, Hart, Robben, & Griffin, 2000), at the same time, NPD is becoming more costly and needs to be faster, making the achievement of high levels of success more problematic (Cooper, 2001, 2011; Stanko, Molina-Castillo, & Munuera-Aleman, 2012). From a practitioner standpoint, therefore, the typology of distributor input developed in this study can be of value to NPD managers because it helps them to identify key product-related issues that need to be addressed and to map out the incremental NPD program for the PLM phase. Including distributors as part of this program has the potential for identifying customer needs and new product ideas, reducing development costs and speeding up the NPD program.

A first step in planning for distributor involvement in the NPD program during PLM is for managers to undertake an analysis of their distributors and to determine the types (market and technical) and levels of information processing competency they possess. Next, the complexity of the product itself and the extent to which different types of product modification tasks (e.g., simple, such as changing the color or adding a stand versus complex, such as adding new functions or radically reconfiguring the display) are likely to be undertaken. According to our findings, simple product-related issues are often addressed by distributors who have a high

level of competence, without input from producers (type 4); while more complex scenarios require active producer involvement (type 3). In effect, by categorizing distributors according to the typology developed in this study, producers can learn about what type of contribution to expect from each. To get full advantage from such a system, however, producers must become an active part of the distributor NPD-related information process as potential users of the information and knowledge generated by these channel members. This can be achieved by training frontline personnel to focus not only on making sales, but also on gaining access to product-/customer-related information that is being gathered and stored by distributors or on actual product changes that have been implemented by them. Additional ways to make the channel relationship more active with respect to NPD would be to plan regular meetings with certain types of distributors and to introduce explicit ways to attract input through, for example, rewards and acknowledgement of contributions, offering exclusivities, or developing license agreements when distributor contribution is substantial.

Producers can go further by involving distributors as an integral part of their NPD process. To this end, the typology can serve as a concrete hands-on tool on how to manage different information processing scenarios and take advantage of each. According to the findings, distributor information can benefit at least two important stages of the producers' NPD process during PLM. First, the up-front idea generation/evaluation stage would benefit substantially from the outcomes of both type 1 (i.e., *problem informers*) and type 2 (i.e., *solution informers*) information processing. These distributors, who are primarily marketers with only a basic level of technical competence, could be included early in the NPD process as part of brainstorming or focus groups to identify new opportunities. When distributors act as *problem informers*, they transmit information about product-related problems to producers and this can be used as a starting point for generating specific ideas on how to improve the products and make them more competitive. In the case of type 2, where distributors act as *solution informers*, the idea generation and concept

development stages are potentially reduced in time as the information provided also entails ideas on how to address a product-related issue in technical terms. In both cases, producers must engage in additional information processing cycles in order to make sense of the information and to ensure that the distributor's suggested solution is the best approach to modifying the product. Nevertheless, including distributors as part of this process has the potential to enrich the discussion with better understanding of market needs, to increase the number of credible ideas put forward, and to reduce this front-end stage in terms of cost and time.

A second NPD stage likely to be impacted by the inclusion of distributors is product prototyping. This stage would benefit most from the inputs of type 3 (*solution manager*) and type 4 (*solution implementer*) information processors; however, they are more problematic to integrate as part of the NPD process. In the *solution manager* scenario, the distributors are customer-oriented and play the proactive role in organizing for the joint development of a customized solution to a problem. These distributors have a high level of competence (both market and technical), but need producers to actually implement the solution due to high task complexity. The approach is clear: given that some of the 'managed solutions' may entail lead users and thus represent expanded markets with substantial potential for the future, producers need to be open and receptive to ensure they are a working part of this distributor NPD-related scenario.

The product prototype stage of NPD is also relevant for the *solution implementer* (type 4) scenario. In this case, at least one prototype has already been developed by the distributor, usually in response to a relatively simple, but urgent, customer request. When undertaking a more permanent solution, producers may consider using the modification 'as is', thus substantially reducing the development cost and time of both the front end and the prototype stage of the NPD process. But, the information outcome of this scenario is not always readily accessible to producers. One reason is that this distributor type is less proactive in sharing the information, given that the problem was solved to their satisfaction (i.e., the sale was

made). Another reason might involve issues of intellectual property, where the distributor is not willing to provide the information without compensation. In order to take advantage of this scenario, producers should focus on creating 'win-win' situations. This would involve establishing appropriate information sharing mechanisms by which to gain access to these product improvement opportunities. For example, they might monitor and actively seek information about distributor maintenance and repair activities, as these may contain important clues about already implemented solutions. Further, negotiating licensing or exclusivity agreements for some of the better product modifications could benefit both parties and may be a good approach getting access to the intellectual property.

This exploratory investigation provides novel insights, but also has *limitations* that suggest directions for future research. First, the small sample size and its focus on the industrial distributor/producer sector, while coherent with the exploratory nature of this investigation and its goal to get a more in-depth understanding of distributor involvement in NPD, limits the generalization potential of the findings. Thus, future research should focus on validating this typology through a larger scale quantitative study (Doty & Glick, 1994). This would provide insight about the frequency of the various scenarios in the real world; and perhaps by including measures of thresholds for task complexity and NPD-related information processing competence, this might lead to other NPD-related information processing scenarios not described here. Such a study might also incorporate the industrial services sector to determine whether the typology developed in this study is also relevant for describing how distributor contributions to service innovation unfold. Indeed, the service literature underlines the importance of frontline employees or sales representative as valuable sources of service innovation due to their privileged access to customers (de Brentani, 2001; Lievens & Moenaert, 2000; Storey & Easingwood, 1998). Service companies often outsource their distribution, calling for essential input from local service providers to perform adaptations in order to meet local market characteristics and needs. A second limitation is that the scenarios developed here are

not directly connected to NPD performance. Given the result of a recent meta-analysis that information processing has a beneficial impact on new product success (Pentina & Strutton, 2007), the inclusion of performance measures in a future, large-scale, version of this study would verify the positive impact on new product performance as suggested by some respondents in this study. A third limitation is that the typology describes how and when distributors process NPD-related information, but falls short of identifying environmental factors affecting the occurrence of each scenario and how these might impact the information processing relationship between distributor and producer. Future studies might incorporate key modifiers, such as competitive intensity, market instability or degree of globalization (de Brentani, Kleinschmidt, & Salomo, 2010; Frazier et al., 2009; Song et al., 2008) that would nest distributor, product-related, information processing activities in relevant external environments. These limitations notwithstanding, the study does respond to key questions about the role of distributors in undertaking product-related activities during the post-launch PLM phase of NPD. Given the dearth of research and the importance of lifecycle management NPD activities to long-term performance, it provides new insights to this important topic and a more solid basis for undertaking future research in this area.

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Chapter 3.

Business-to-Business Relationships on the Fast Track : An Empirical Investigation into the Outcomes of Solution Provision

Abstract

Customer solutions are traditionally associated with several positive outcomes for their providers, including gains in customer retention, sales volumes and cross-selling. Yet, empirical research documenting these outcomes is very limited. Furthermore, the literature provides ambiguous arguments regarding whether solutions provision is equally effective when directed at new or established customers. We use the 'process-centric' view of solutions, together with interorganizational 'relationship lifecycle' theory to develop two competing mechanisms—'solution as leverage' and 'solution as accelerator'—by which to explain the link between outcome and solution provision for established versus new customers. Based on longitudinal sales data from a North American solution provider, the analysis uses the mixed-effect, mixed-distribution (MEMD) model, which allows for a precise estimate of distinct, but related, random processes in the variables in question. The results (1) empirically confirm the positive impact of solution provision on outcomes; and (2) lend overall support to the 'solution as accelerator' explanation. Solution providers were found to achieve significantly higher gains in terms of total sales and cross-selling when targeting solutions at new rather than at existing customers; customer retention increases were similar for both groups.

Keywords: Industrial marketing; business-to-business transactions; solution provision; relationship lifecycle, customer relations; customer retention; sales

3.1. Introduction

In today's business-to-business (B-to-B) marketplace, customer solutions are an important part of companies' offering. "Customer solutions" are defined in the current literature as relational processes involving customers and suppliers aimed at addressing a specific customer business need that includes a customized integration of goods and/or services (Tuli, Kohli, & Bharadwaj, 2007). As an innovative offering developed by firms to address their customers' business needs (MSI, 2010; Sawhney, 2006), customer solutions are provided by companies operating in a variety of sectors, from information technology to health care and to chemicals (Day, 2004; Sharma, Lucier, & Molloy, 2002; Vargo & Lusch, 2004). For example, IBM[2] and SAP[3] showcase "solutions" as their primary offering, followed by products and services. Both the academic and business community literatures claim that offering customer solutions, as opposed to simple transactions involving stand-alone products/services, not only do a better job in addressing the immediate needs of customers, but allow suppliers to achieve higher customer retention, increased sales volumes, and more extensive cross-selling opportunities (Matthyssens & Vandenbempt, 2008; Miller, Hope, Eisenstat, Foote, & Galbraith, 2002; Sawhney, 2006). Yet, there is little empirical evidence in support of these performance-related outcomes (Day, 2004; Lilien et al., 2010; Nordin & Kowalkowski, 2010; Sawhney, 2006). The most frequently cited article concerning the benefits of solutions for suppliers is based primarily on anecdotal evidence (Miller et al., 2002).

Linked to the issue of solution provision as a determinant of supplier performance is the question of what type of customer firms should be the focus of the more complex solution-based offerings. Competing arguments can be derived from the relational nature of the solution provision process (Tuli et al., 2007) in favor of

[2] http://www.ibm.com/us/en/, accessed on August 30, 2013.
[3] http://www.sap.com/solution.html, accessed on August 30, 2013.

which category of customers—new or established—will produce higher gains for suppliers. Some authors hold that it is current customers who should be given priority in the decision to offer solutions, as a thorough knowledge of and a solid relationship with these already established customers are essential factors for assuring an effective solution provision process (Cornet et al., 2000; Cova & Salle, 2007). In effect, this stream of literature views the use of solution provision in terms of "solution as leverage" or a way by which suppliers can enhance the gains they achieve from their current portfolio of customers. There is also literature to suggest that solution provision is a key approach for attracting new buyers; and focusing this effort on new-to-the firm customers is important for achieving growth and the long-term well-being of the company (Bonney & Williams, 2009; Storbacka, Polsa, & Sääkjärvi, 2011). Because it entails close interaction between solution provider and customer (Tuli et al., 2007), the solution provision process itself can be seen as an important facilitator in the contextual exchange between and the gathering and sharing of information by customer and supplier. Because new customers can benefit substantially from these repeated exchanges with the solution provider, this leads to higher gains in the performance-related outcomes associated with solution provision. In this article, this alternative explanation of solution provision outcome is labeled "solution as accelerator". Both points of view are plausible; thus, it is unclear which category of customer, established or new, leads to higher gains for suppliers in the important outcomes of retention, total sales and cross-selling opportunities as a result of solution provision.

In this article, we address the knowledge gaps relating to the type of offering (solution provision versus stand-alone product/service sale) and to the two categories of customers (established versus new). We investigate their impact on performance-related outcomes for suppliers by conducting an empirical study using archival sales data from a North American solution provider. First, we compare sales patterns of simple versus solution-based transactions in order to confirm whether the higher

outcomes are associated with the latter. Next, we examine whether it is new or established customers that are associated with superior outcomes for suppliers. In our model, solutions as compared to the sale of stand-alone products or services are seen as having a stronger impact on supplier outcomes in the form of higher customer retention, increased sales volumes and enhanced cross-selling opportunities. As a key moderator of this relationship, the concept of relationship lifecycle (Dwyer, Schurr, & Oh, 1987; Jap & Anderson, 2007) is used: this, in order to capture the two stages of customer development—that is, the early stages related to new customers versus the advanced stages of servicing already established customers. Through this, we determine which of the two competing explanations—'solution as leverage' or 'solution as accelerator'—is most relevant in determining outcome. The results of this longitudinal analysis provide support for (1) the notion that solution provision leads to higher outcomes for suppliers than stand-alone products; and (2) that 'solution as accelerator' provides a better approach for achieving superior performance-related outcomes. In other words, suppliers can achieve higher gains when they focus on solution provision and when they direct these efforts at new customers rather than established ones. A schematic representation of the study and its theoretical context is provided in Figure 3.1.

The results of the study contribute to both marketing theory and practice. A key contribution to marketing theory consists of the documentation of an additional consequence of solution provision—that is, that solutions, when viewed as relational processes (Tuli et al., 2007), have a positive impact on the development of relationships with new customers. Thus, the identification and empirical confirmation of the 'solution as accelerator' effect enriches the body of research on solution provision in the B-to-B marketing literature (Bharadwaj, Naylor, & ter Hofstede, 2009; Storbacka, 2011; Tuli et al., 2007). At the same time, by addressing the lack of empirical evidence (G. Lilien et al., 2010; Nordin & Kowalkowski, 2010), this study quantifies and empirically confirms prior claims regarding the positive outcomes of

solution provision (e.g., Miller et al., 2002). From a managerial perspective, the research raises awareness about the relationship-acceleration value of solutions for new customers. Solution provision is found to have a positive performance impact and also to reduce the gap existing between new and existing customers with respect to these outcomes. This effect has the potential to shift managers' attention from the more immediate effectiveness of the solution provision process to its more far-reaching outcomes, including customer retention and future sales potential (Foote, Galbraith, Hope, & Miller, 2001; Storbacka et al., 2011). Further, through the solution provision process, suppliers can develop relationships with new customers at a faster pace than is possible when the transaction entails the purchase of a stand-alone product or service. As a result of the more frequent and more intense interactions that take place during solution provision, suppliers can achieve higher gains from new customers. In sum, the current study proposes that solution provision is positively associated with supplier outcomes and, in particular, that this can play an important role in unlocking the growth potential inherent in new customers, putting such relationships on the 'fast-track'.

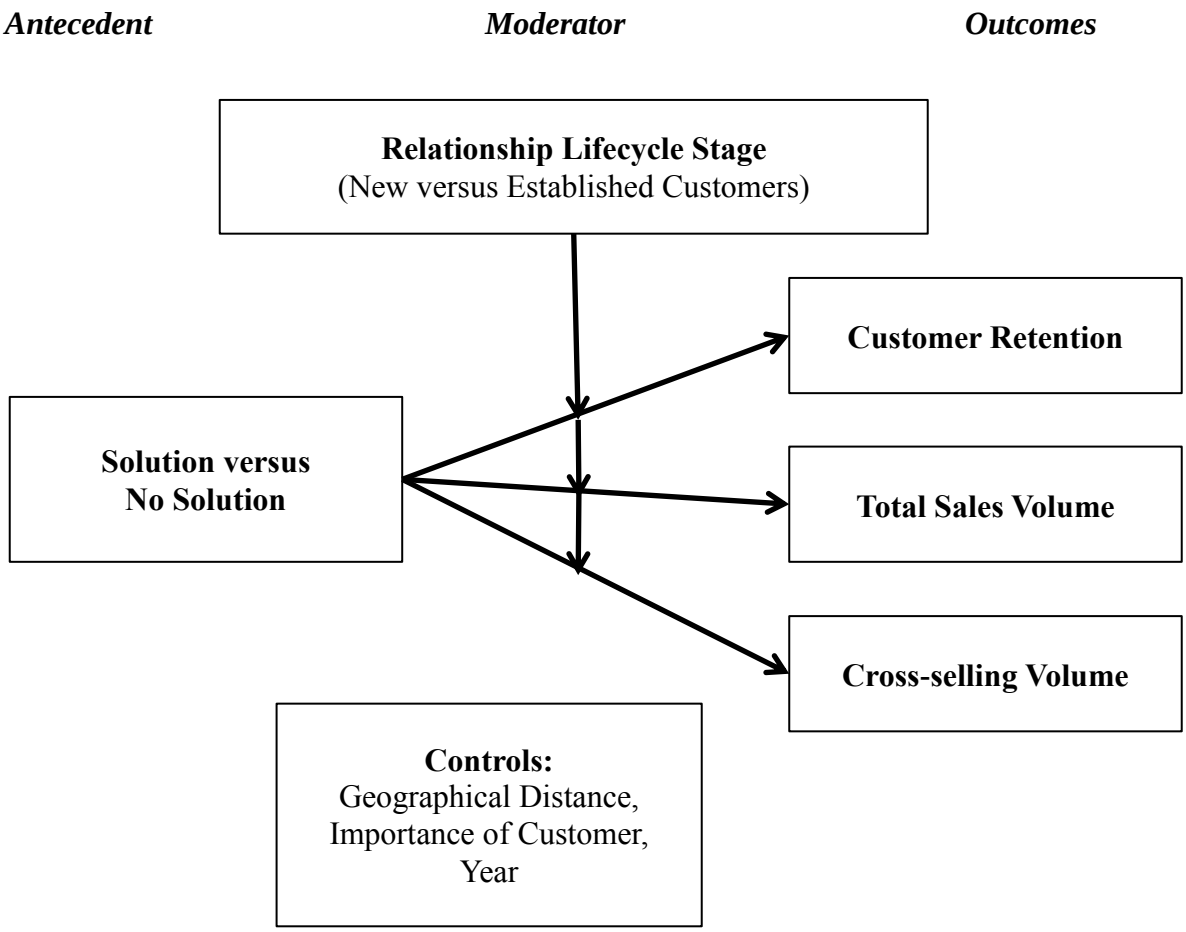

Figure 3.1 : Conceptual Framework

3.2. Literature Review

3.2.1. What is a Customer Solution?

There are two schools of thought when it comes to the definition of what constitutes a 'customer solution'. According to one view, solutions entail the customization and integration of goods and/or services to more effectively solve a customer's problem (Davies, Brady, & Hobday, 2006). This view is defined as 'product-centric' because

the entire emphasis is on the integration of products and services (Tuli et al., 2007). As an illustration of the product-centric view, Davies et al. (2006, p. 1) describe solutions as "tailored combinations of products and services as high value 'integrated solutions' that address the specific needs" of business customers; and Sawhney (2006, p. 78) speaks of "a customized, integrated combination of products, services and information that solves a customer's problem."

Another school of thought is supported by Tuli et al. (2007) who criticize the 'product-centric' view of solution provision due to its narrow focus on operational aspects. These authors propose a broader perspective that includes not only the product-related aspects of solution provision, but also its relational dimension. According to Tuli et al. (2007, p. 2), customer solutions are "a set of customer-supplier relational processes comprising (1) customer requirements definition, (2) customization and integration of goods and/or services, (3) their deployment, and (4) post-deployment support." This definition of solution is labelled 'process-centric' because of the distinctive feature that solutions are first and foremost a relational process (Bharadwaj et al., 2009; Nordin & Kowalkowski, 2010; Tuli et al., 2007). This much broader picture was established as a result of Tuli et al.'s (2007) investigation of solutions that took both the customer's and the supplier's perceptions into account. Whereas suppliers saw solutions primarily as the simple integration of customized goods and/or services, customers viewed this customization-and-integration activity as only one of four relational processes that took place during solution provision, the other three being customer requirement definition, solution deployment and post-deployment support. The current research adopts the 'process-centric' view as its underlying framework regarding solution provision due to its greater realism (relates to both supplier and customer) and its greater potential in terms of explaining how solutions contribute to supplier performance through higher customer retention, total sales and cross-selling opportunities.

3.2.2. The Solution Provision Process

The four relational processes that comprise the solution provision process, as identified by Tuli et al. (2007), play a key role in addressing the needs of business customers (Nordin & Kowalkowski, 2010). The first stage in the solution provision process entails a thorough *customer requirement definition*. This includes developing functional specifications of products and/or services which are framed within the broader set of business needs of the customer. During this stage, the solution provider must consider both the immediate customer requirements as well as how these are likely to evolve over the longer term. This stage is followed by the *customization and integration of goods and services* process, where customer needs drive the design, modification and selection of products and services that make up the customer solution. In other words, suppliers combine several physical goods and/or intangible services that are carefully selected, designed and modified in the form of a customized solution to meet a specific customer problem. Stage three of the solution provision process is *deployment*. This involves the delivery and installation of the solution on the customer's premises and is often accompanied by tailored training programs as well as additional modifications, when needed. The final stage of solution provision is the *post-deployment* process, which entails such activities as "providing spare parts, operating information, and routine maintenance", as well as "deploying new products in response to evolving requirements of a customer" (Tuli et al., 2007, p. 7).

3.2.3. Outcomes of Solution Provision for Suppliers

The first goal of the research presented in this article is to address the call for more empirical research to support the claim that more positive outcomes are associated with solution provision (Lilien et al., 2010; Nordin & Kowalkowski, 2010; Sawhney, 2006). The marketing literature is found to be rich in statements regarding the

benefits of solution provision. Beyond being of value to customers, solutions are seen as also benefitting suppliers by contributing to "the creation of a durable competitive advantage and the perpetuation of relations with customers" (Cova & Salle, 2008, p. 142). Suppliers derive from their solution provision efforts "expanded margins and volumes […], cross-selling opportunities" (Miller et al., 2002, p. 6), as well as higher customer retention (Sawhney, 2006). Therefore, solution provision can contribute to the customer relationship management goals of companies not only in terms of increasing the usage level of the products and services (i.e., *relationship development*), but also in terms of extending the duration of the relationship with the customer (i.e., *relationship maintenance*) (Aurier & N'Goala, 2010; Bolton, Lemon, & Verhoef, 2004; Kamakura, Wedel, de Rosa, & Mazzon, 2003).

The literature ties solution provision to positive outcomes, both in terms of higher *sales* and expanded *cross-selling* opportunities (Miller et al., 2002). Increased sales volumes occur when customers increase their usage level of a company's products (Bolton et al., 2004), while expanded cross-selling is realized when customers purchase additional product categories offered by the same company (Kamakura et al., 2003). Sawhney (2006, p. 367) notes that solution providers "do more business with existing customers by offering them an expanded portfolio of service-intensive solution offerings […, representing a] bigger market opportunity than the core product market". In effect, the solution provision process exposes customers to the broader offerings and to the additional areas of expertise of the solution provider (Miller et al., 2002). Solution provision, however, is not only linked to higher sales volume but also has a longer term effect of enhanced customer *retention* (Sawhney, 2006). According to Cova and Salle (2008, p. 142), solutions contribute to "the perpetuation of relations with customers". Sawhney (2006) affirms that solutions increase the embeddedness between the customer and the solution provider, which in turn increases customer loyalty and decreases the likelihood of switching to another provider. Due to their high level of customization, solutions can

be expected to positively impact repurchase intentions and subsequently customer retention (Bharadwaj et al., 2009; Lam, Shankar, Erramilli, & Murthy, 2004).

Although frequently mentioned in the literature, statements about these positive performance-related outcomes of solution provision are not accompanied by conclusive empirical evidence in this regard (Lilien et al., 2010; Nordin & Kowalkowski, 2010; Sawhney, 2006). For example, Miller et al. (2002), the most frequently cited article on the topic of outcomes of solutions, while offering some anecdotal information, does not provide substantive empirical support for their conclusions. To address this gap, the first goal of our research is to use objective sales data in order to compare the levels of sales, customer retention and cross-selling achieved by suppliers after customers purchase solutions versus other products/services.

3.2.4. Different Types of Customers and Solution Provision Outcomes

The second objective of the study is to determine whether the impact on performance-related outcomes of solution provision differs depending on the type of customer targeted. We focus on the customer-supplier relationship as this is a key distinguishing feature of the process-centric view of solution provision (Tuli et al., 2007). Theory and practice show that solution provision can take place in the context of both new, or recently established, customers as well as those involving long-standing relationships (Bonney & Williams, 2009; Cova & Salle, 2007; Storbacka et al., 2011). As servicing existing customers and also acquiring new ones are key goals of most B-to-B suppliers (Gounaris, 2005), solutions are seen as important contributors to achieving both goals. For example, Bonney and Williams (2009, p. 1047) acknowledge that solutions "have the potential to offer significant competitive barriers with existing customers as well as opportunities to increase sales with new customers." Little is known, however, about the extent to which solutions lead to

higher or lower performance-related outcomes, depending on the category of customer targeted. Thus, the second objective of this research is to deal with the question: which category of customer—new versus long-standing—should suppliers prioritize for optimal performance?

To answer this question, in line with the process-centric view of solutions, this study adopts the notion of interorganizational *relationship lifecycle* to in order to categorize customers in terms of their length of relationship with a given supplier. New versus established customers reflect different stages in the evolution over time of the relationship between a firm and its customers (Anderson & Narus, 1990; Dwyer et al., 1987; Jap & Anderson, 2007). According to relationship lifecycle theory, inter-organizational relationships move through different stages as repeated business opportunities and contacts allow for the development of relational bonds between firms (Dwyer et al., 1987; Ring & Ven, 1994). More specifically, inter-organizational relationships move from an initial exploration stage to build-up, to maturity, and eventually to decline (Dwyer et al., 1987; Jap & Anderson, 2007). In terms of this relationship lifecycle spectrum, new customers are likely to be at the early exploration phase because they have had only a limited number of contacts with the supplier, often including only trial purchases (Dwyer et al., 1987; Jap & Anderson, 2007). Established customers, on the other hand, are situated at the more advanced stages of build-up or maturity, because they have already been involved in repeated transactions, resulting in a stronger bond and a higher level of interdependency between customer and supplier (Dwyer et al., 1987; Jap & Anderson, 2007).

In the next sections, two competing explanations are developed—based on the process-centric view of solution provision and the relationship lifecycle view of the customer-supplier relationship—regarding the type of customer that is associated with higher gains for suppliers of solutions in terms of customer retention, total sales volume and cross-selling opportunities. In the first explanation, higher gains are

expected from established customers because solutions are viewed as leveraging an already established relationship. In the second explanation, higher gains are expected from new customers because the solution provision process contributes to the development of this new customer-supplier relationship, thus accelerating its potential in terms of outcome and growth.

3.2.4.1. Solution as Leverage

The 'solution as leverage' explanation contends that suppliers are more likely to obtain higher gains in customer retention, sales and cross-selling when they provide solutions for established customers. This explanation echoes the school of thought in the marketing literature that views established customers as the preferred target of a firm's marketing effort. What is emphasized here is that an "intimate relationship [is needed] to co-create solutions [in] a climate of trust and good commitment" (Cova & Salle, 2007, p. 143). Established relationships are characterized by the better knowledge that each partner has gained over time and by the deeper understanding of respective needs that has resulted (Adler & Kwon, 2002; Ghosh, Dutta, & Stremersch, 2006; Tuli et al., 2007). As a consequence, several relational properties linked to effective solution provision—such as trust, commitment and cooperation—are typically found to increase over time, as the relationship between customer and supplier moves to a more advanced stage (Dwyer et al., 1987; Jap & Anderson, 2007). It follows that suppliers can use solution provision to further 'leverage' this detailed and in-depth knowledge of the customer and the strong relationship that is already established to produce even greater outcomes in the future. This hypothesis is supported by findings in the Customer Lifetime Value literature (Reinartz & Kumar, 2000; Venkatesan, Kumar, & Reinartz, 2012), which proposes that existing customers typically purchase more from their suppliers over time.

Based on these considerations, a solid customer-supplier relationship seems to be a prerequisite for effective solution provision. Thus, using the 'solution as

leverage' explanation, one would predict that customers who are at advanced stages of the customer-supplier relationship lifecycle will produce higher gains in performance-related outcomes. This explanation, in turn, predicts lower gains when solution provision is aimed at new customers because the development of the customer-supplier relationship is much less advanced. From an empirical research standpoint, the 'solution as leverage' explanation is supported if established customers show higher gains than new customers in their levels of retention, sales volume and cross-selling outcome.

3.2.4.2. Solution as Accelerator

The 'solution as accelerator' explanation predicts that suppliers obtain greater gains in performance-related outcomes when they aim their solution provision efforts at new, or very recent, customers. This explanation is based on suggestions in the literature that offering solutions, rather than stand-alone products/services, is an important way of achieving growth through the attraction of new customers (Bonney & Williams, 2009; Storbacka et al., 2011). In comparison to stand-alone transactions, that have less relational and expertise content (Bharadwaj et al., 2009), solution provision consists of several interaction stages between supplier and customer (Tuli et al., 2007). Hence, from the very beginning of the process suppliers are oriented towards developing an intensive relationship with the new customers in order to gain insights into their character, operations and requirements. These multiple and in-depth interactions allow the customer-supplier relationship to flourish as the solution provision process moves forward. Thanks to the many interactions that are an essential aspect of the solution provision process, suppliers get acquainted with customers' activities and learn about their internal dynamics (Tuli et al., 2007). This enhanced understanding and knowledge can be used not only for the immediate solution provision scenario but beyond this to effectively develop future offerings. The customer knowledge gained and the relationship developed through the solution

provision process is argued to occur at a faster pace. This is because suppliers not only can provide a more effective solution to the immediate client problem, but these new customers are in a position to learn about other product categories offered by the supplier, leading to enhanced sales and cross-selling opportunities in the future (Kamakura et al., 2003; Sawhney, 2006). Compared to established customers where future potential has already been largely exploited, new customers represent much greater promise for growth (Srivastava, Shervani, & Fahey, 1998). This suggests that solutions have the effect of 'accelerating' future growth in sales and profits when these are aimed at new-to-the-firm customers; this, because solutions can be thought of as an important opportunity to develop an extended relationship between the customer and the supplier (Cova & Salle, 2008). Thanks to multiple interactions between the two parties, the solution provision process can directly contribute to the evolution of this relationship from the early to the more advanced stages of the relationship lifecycle. From an empirical research standpoint, the 'solution as accelerator' explanation is supported if new customers, compared to more established ones, demonstrate higher gains for suppliers in the level of customer retention, sales volume and cross-selling following the purchase of a solution.

3.3. Methodology

3.3.1. Empirical Setting

To respond to the two research questions in this study, archival data covering ten years were obtained from a North American industrial SME that provides solutions as a key part of its total offerings to business customers. The company is referred to as *LabelCo* in our study because of a confidentiality agreement. It employs 65 people, records annual revenues of $10-15 million and has about 5,000 customers, ranging from local SMEs to large international companies. Independent industry sources

describe *LabelCo* as a well-managed and high-performing company, with above average growth and with gross profits in line with the industry average (TLMI, 2009). *LabelCo* offers solutions in the labeling and identification domain by combining three main activities: in-house production of labeling products (about 50% of its revenues), distribution of third party products for labeling, printing and product identification (about 25%), and consulting, technical and printing services (about 25%).

Using the classification of organizational configurations for solution provision by Davies, Brady, and Hobday (2007), *LabelCo* can be defined as a 'system integrator' because it actively takes part in the solution provision process. The company collaborates with its upstream suppliers and customers in customization activities and performs most of the integration activities at its headquarters. More important, *LabelCo* offers solution provision in line with the 'process-centric' view. Interviews with *LabelCo*'s top management indicated that a typical solution provision consists of the four relational processes described by Tuli et al. (2007)—that is, customer requirements definition, customization and integration of products and services, deployment of the solution, and post-deployment customer support. For example, when describing the solution provision process for a particular customer, the VP of Technical Service of *LabelCo* described the *customer requirement definition* phase in the following terms:

> Two weeks ago, a customer of ours asked a sales representative for an automated print-and-apply labeler. I decided to visit the customer because I did not have all the information needed to address this request. Once I met the customer and finished the study, I proposed two options: "I have the print-and-apply labeler your VP-Operations has asked for; but I also have another option that costs $5,000 more, but that eliminates the shortage of label supplies and saves money by eliminating the waste of labels that are printed and not used.

The company described the *customization and integration of goods and services* stage in the following terms: "As the customer accepted our second option, we needed to integrate the print-and-apply labeler and the conveyor, and also to

configure the right settings for the software managing the process. We did the integration in our technical department and kept the customer informed." *Deployment* of the solution consisted of the following: "Once we finished the integration, we went on site to install the solution with all the components. We undertook tests to make sure that everything was working as expected and we trained customer staff to make full usage of the solution." Finally, the *post deployment customer support* phase was described as:

> We ensure that everything works fine with the labeler-conveyor solution for our customer. We provide a guarantee to our customer that we will stand by in case issues arise during the daily use of the labeler-conveyor solution. We make sure that the solution continues to correspond to the company's needs.

In sum, as described above, *LabelCo* can be considered to be actively involved in solution provision and adopting the 'process-centric' view as defined by Tuli et al. (2007). As such, the sales database of *LabelCo* provides an appropriate empirical setting to investigate solution provision and its impact on performance-related outcomes for solution providers.

3.3.2. Measures

LabelCo provided access to its sales database used for accounting and industry benchmarking purposes. The database contains information about more than 4,900 B-to-B customers and 120,000 transactions over a ten-year period (i.e., 2002-2011). Specifically, the database contains the following entries for each transaction: items sold, sales volume, price, cost and quantity, invoice details, and customer identification data (e.g., internal ID, company name, address, and area code). Based on these entries, several measures were derived for the empirical investigation.

Three dependent variables are used in this study: customer *retention* (Ret_{it}), *total sales* ($TotSales_{it}$), and *cross-selling* volume ($CrossSelling_{it}$). *Retention* was

operationalized as a binary variable (Ret_{it}) based on repeated purchase activity by customer *i* with *LabelCo* in year *t* (van Triest, Bun, van Raaij, & Vernooij, 2009). Ret_{it} takes the value of one (1) if a customer *i* active at year *t minus 1* made at least one purchase in the current year, and zero (0) otherwise. Preliminary analyses conducted on the database revealed that the average number of transactions per customer is 3.6 per year (median=2), suggesting the appropriateness of the one-year window.

Total sales volume ($TotSales_{it}$) was calculated as the sum of all transactions made by customer *i* in year *t*. C*ross-selling* volume ($CrossSelling_{it}$) was calculated as the sum of the transactions made by customer *i* in year *t* in all of the remaining product categories offered by *LabelCo,* except solutions. This adaptation from existing studies on cross-selling (Kamakura et al., 2003; Reinartz, Thomas, & Bascoul, 2008) simplifies *LabelCo* offerings by categorizing them either as 'solutions' or as 'general' offerings comprising all remaining products and services. In the remainder of the study, for the sake of parsimony, the former is referred to as *Solution*; the latter as *No Solution*.

As per the conceptual framework, *Solution* is the independent variable and *Relationship Lifecycle Stage* is the moderating variable. *Solution* is binary, having the value of one (1) if at least one solution transaction was recorded for customer *i* in the previous year, and the value of zero (0) otherwise. According to *LabelCo* senior managers, customized print-and-apply labelers and data capture equipment and software are the main types of 'process-centric' solutions offered by the firm. Thus, transactions were categorized as 'solutions' if they involved these items in the invoice details. An alternative specification, using the dollar amount of a solution-related purchase, was tested and led to similar results (see section 3.4.4. on *Robustness Check*). Therefore, the binary specification was retained throughout the analyses for the sake of parsimony and to facilitate interpretation of the results.

As a proxy for the *Relationship Lifecycle Stage*, a time-based dummy variable labeled *Established* was created. This is in line with previous studies that use the number of years in the relationship as a proxy for the lifecycle stage (e.g., Stock & Hoyer, 2005; Wagner, 2011). A four-year window was chosen as it represents twice the typical window for sales cycles of B-to-B customers similar to those of *LabelCo* (e.g., Siguaw, Kimes, & Gassenheimer, 2003). *Established* takes the value of 1 if customer *i* had more than one transaction with *LabelCo* over the previous four years. Such a customer is considered to be an "established" customer who is at a more advanced stage in the relationship lifecycle. *Established* takes the value of 0 if the year of solution provision represents the first year during which customer *i* had transactions with *LabelCo*. Such a customer is considered to be 'new' for *LabelCo* and thus at an earlier stage in the relationship lifecycle. Alternative specifications with two- and three- year windows as well as the sum of years were tested and led to similar results (see section 4.4. on *Robustness Check*). As for *Solution*, the binary specification of *Established* was retained throughout the analyses for the sake of parsimony and to facilitate interpretation of the results.

Two control variables were included to account for alternative explanations: *geographical distance* and *importance of customer*. With respect to *geographical distance*, physical proximity between a company and its customers may facilitate the development of business and interpersonal relationships (e.g., Ganesan, Malter, & Rindfleisch, 2005). This might translate into higher retention and sales volume, as well as a higher likelihood of solution provision. At the same time, the relationship lifecycle stage might be linked to geographical distance, as a company might first develop a customer base in the surroundings of its headquarters. In our model, geographical distance is calculated according to the Haversine formula, based on latitude and longitude coordinates between the shipping address of customer *i* and of *LabelCo* headquarters (Ivis, 2006; Shumaker & Sinnott, 1984).

Regarding the *importance of customer* control variable, *LabelCo* may deploy other actions or exert efforts oriented towards attracting and maintaining more important and valuable customers, independent of solution provision. In our model, the importance of a customer is based on the measure developed by Palmatier, Scheer, Houston, Evans, and Gopalakrishna (2007), which is calculated as the yearly amount of sales excluding solution-related purchases. The solution-related amount was excluded to prevent collinearity among the independent variables. In addition, dummy variables were created for the years included in the main model analysis to account for potential external shocks affecting the dependent variables. This is particularly important given the incidence of the 2007-2009 financial crisis on North-American companies (National Bureau of Economic Research, 2010).

Lagged values of the independent variables are used to attenuate potential endogeneity concerns (e.g., Mishra & Shah, 2009). All independent and control variables, except the categorical ones, are mean-centered to facilitate the interpretation of parameters. Of the ten years of data available, the last five fiscal years (i.e., July 2006 - June 2011) were used to estimate the outcomes. The first three years (i.e., July 2002 - June 2005) served only for calculating the customer lifecycle stage, whereas solution provision was calculated starting from July 2005.

3.3.3. Model Specification and Estimation

The dependent variables of interest—*retention, total sales* and *cross-selling*—are distinct, but related, customer outcomes. The particular relationship between these outcomes is evident when considering the typical purchase process of a given customer (e.g., Tellis, 1988). First, customer *i* active at year *t minus 1* can purchase or not from *LabelCo* in the following year. If a purchase is made, *retention* provides an indication of continuity in the relationship between customer *i* and the supplier (van Triest et al., 2009). Second, after choosing to purchase from *LabelCo*, the retained customer *i* has to decide how much to purchase both in terms of total volume (i.e.,

total sales amount) and in additional product categories beyond solutions (i.e., *cross-selling* amount). These amounts equal zero, when a customer *i* is not retained in year *t*.

These related outcomes have important consequences from both a practical and a modeling standpoint. From a practical standpoint, managers want to know not only the probability of retaining their customers, but also what purchase amount can be expected, given that some customers may not purchase during the next year. From a modeling standpoint, researchers need to consider that, while distinct, these two outcomes might be correlated (Tooze, Grunwald, & Jones, 2002). As sales are recorded only for retained customers, the model estimation needs to account for potentially unobserved variables that might affect the probability of customer retention beyond the ones included in the model (Heckman, 1976; Tooze et al., 2002). Not considering this element might lead to a systematic bias in the estimate of the sales amount (Tooze et al., 2002).

The mixed-effects, mixed-distribution (MEMD) model with correlated random effects allows for a precise estimate of these distinct, but related, random processes (Tooze et al., 2002). The MEMD model is a two part model originally developed in biostatistics to analyze semi-continuous data with extensive number of zero (0) values, such as healthcare costs, medical expenditures and monetary income levels (Gold et al., 2006; Mihaylova, Briggs, O'Hagan, & Thompson, 2011; Tooze et al., 2002). The MEMD model simultaneously estimates "a mix of two separate distributions of zero and positive values, representing two different but correlated random processes" (Gold et al., 2006, p. 383). The MEMD model has two components: the *occurrence model* and the *intensity model*. The *occurrence model* is a logistic regression that models the probability of the occurrence of non-zero values in the outcome variable. The *intensity model* is a lognormal regression that models the probability distribution of non-zero values of the outcome variable.

Both the occurrence and the intensity models contain a random effect to account for the non-independence of observations due to the repeated measures for each subject (Xie, McHugo, Sengupta, Clark, & Drake, 2004). Regarding these random effects, two specifications of the model are estimated: a model with correlated random effects and a model with uncorrelated random effects. A comparison of the two models provides an indication of whether or not there are unobserved variables affecting customer retention—that is, if the covariance parameter is significant, the correlated model is preferred as it allows for the control of this potential bias (Tooze et al., 2002). Furthermore, the strength of the association between the random effects is provided by *rho* (ρ). According to Tooze et al. (2002), this parameter can be interpreted similar to the ρ in Heckman, or type II Tobit, models (Heckman, 1976), indicating the extent to which the error terms in the occurrence and intensity equations covary. Thus, a positive significant *rho* can be interpreted in the MEMD model as an indicator of the fact that "after accounting for covariate differences, subjects with a greater tendency [in the context of our study, to be retained] tended also to have a higher mean amount in the semi-continuous variable [in the context of this study, the total sales volume and the cross-selling volume]" (Tooze et al., 2002, p. 352). These models are estimated in SAS/Stat software (version 9.02) by means of the MIXCORR macro developed by Tooze et al. (2002); their detailed specifications are provided in the next sections.

3.3.3.1. Occurrence Model

The *occurrence model* was used to estimate the impact of solution provision on retention (Ret_{it}) as dependent variable of interest in this first component of the MEMD model (Tooze et al., 2002). Logistic regression is the appropriate modeling approach because defection—defined as the absence of retention for a given customer given that no transaction was recorded in the year following the event of interest—cannot be considered as a unique event, as required by survival analysis using Cox

hazard models (Singer & Willett, 1993). Indeed, the vast majority of the transactions recorded in the *LabelCo* database are of the non-contractual nature (Bowman, 2012; Schmittlein, Morrison, & Colombo, 1987), where "customers purchase completely at their discretion" (Reinartz & Kumar, 2000, p. 21). The logistic regression as alternative approach to retention, labeled as discrete time survival (Singer & Willett, 1991), has already been implemented in marketing when limited number of periods are available (van Triest et al., 2009). In the occurrence model (equation 3.1), the conditional probability of a non-zero value *p*— the probability of customer retention at year *t*—is modeled as a function of explanatory fixed effects and between-participant random effects. Equation (3.1) is specified as follows:

$$(3.1)\quad \text{Logit}(p) = \alpha_{1t} + \beta_{11}\,\text{Sol}_{i\,t-1} + \beta_{12}\,E_{i\,t-1} + \beta_{13}\,\text{Sol}_{i\,t-1} x\, E_{i\,t-1} + \xi_1 C_{i\,t-1} + u_{1i}$$

In equation (1), α_{1t} is a fixed effect for every year. $\text{Sol}_{i\,t-1}$ represents solution provision at time *t minus one*. $E_{i\,t-1}$ represents the customer lifecycle stage. $C_{i\,t-1}$ is the vector of control variables at the customer level, namely, geographical distance and the importance of the customer. u_{1i} is the between-participant, company-specific, random term. This random term takes into account the shared covariance between observations stemming from the same company over time (Xie et al., 2004). u_{1i} has normal distribution with mean and variance $(0, \sigma_1^2)$.

3.3.3.2. Intensity Model

The *intensity model* estimates the impact of solution provision on the *sales amount*, having $TotSales_{it}$ and $CrossSelling_{it}$ as dependent variables in this second component of the MEMD model (Tooze et al., 2002). The intensity model consists of a linear regression with random effects that estimates the mean of log-transformed positive values of sales amount contingent upon retention. The intensity model in equation (3.2) has the same fixed effects as the occurrence model in equation (3.1), plus a

between participant random intercept and a within participant random effect (residuals). Equation (3.2) is specified as follows:

$$(3.2)\ \text{Log}\, Y_{it} = \alpha_{2t} + \beta_{21}\, Sol_{it-1} + \beta_{22}\, E_{i\,t-1} + \beta_{23}\, Sol_{it-1} x\, E_{it-1} + \xi_2\, C_{it-1} + u_{2i} + \varepsilon_{it}$$

Similar to equation (3.1), equation (3.2) includes time fixed effects, control and independent variables. Two different intensity models were calculated in which Y_{it} was operationalized respectively by total sales (*TotSales*$_{it}$), and cross-selling volume (*CrossSelling*$_{it}$). As the analogous random term in equation (3.1), u_{2i} has normal distribution with mean and variance (0, σ_2^2). In addition, the MEMD model allows for estimating ε_{it}; that is, the variance of the residuals, having normal distribution with mean and variance (0, σ_e^2).

3.4. Results

To achieve the first goal of this empirical research (i.e., confirm whether solutions lead to superior outcomes as compared to stand-alone products/services), the main effect of *solution* on the three outcomes, namely, customer retention, total sales and cross-selling, was used. To achieve the second goal, the interaction between *solution* and *established* for the three aforementioned outcomes was used in order to compare the two alternative explanations relating to what type of customers—that is, established ('solution as leverage' explanation) or new ('solution as accelerator' explanation)—leads to higher gains for suppliers after solution provision. Before discussing the empirical evidence regarding the two goals of this research, an overview of the data is provided by means of descriptive statistics (Table 3.1). *LabelCo* sales database contains information about a total of 4,395 unique customers; of these, over 2,000 customers are active each year. Concerning active customers, about 70% have a long-standing record of transactions (i.e., active over a period of four years). *LabelCo* customers tend to engage in repeated patronage behavior within

the one-year horizon considered in this research: over 67% of the customers active in a given year are retained by *LabelCo* the following year. In terms of solution provision, an average 10% of *LabelCo* customers purchase at least one solution every year. This proportion is similar to what is recommended in the literature, (i.e., solutions targeted at about 10-20% of customer base; Cornet et al., 2000; Cova & Salle, 2007).

To complete the overview of the database, the correlation matrix, with mean and standard deviation for each variable included in the model estimation, is also provided below (Table 3.2). The variance inflation factor (VIF) was inspected for multicollinearity for all the models estimated. In all cases, the highest VIF was 3.60687; and all VIF values were below the threshold of 10 (as per Mason & Perreault, 1991), suggesting that multicollinearity is not a concern.

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Table 3.1 : Overview of *LabelCo* Customers (2005-2010)

	2005-2006		2006-2007		2007-2008		2008-2009		2009-2010	
New customers	673	27.62%	499	21.87%	454	19.78%	342	16.40%	486	22.72%
Established customers	1 764	72.38%	1 783	78.13%	1 841	80.22%	1 744	83.60%	1 653	77.28%
Customers purchasing solutions	250	10.26%	265	11.61%	249	10.85%	220	10.55%	188	8.79%
Customers active the following year	1 629	66.84%	1 606	70.38%	1 537	66.97%	1 431	68.60%	1 494	69.85%
Total Number of Active Customers	**2 437**		**2 282**		**2 295**		**2 086**		**2 189**	

Table 3.2 : Correlation Matrix

		Mean	S.E.	Y1	Y2	Y3	X1	X2	X3	X4
Y1	Retention	0.69	0.46	*0.22*						
Y2	Total Sales Volume	4.97	3.62	0.93	*13.11*					
Y3	Cross-selling Sales	4.88	3.61	0.91	0.98	*13.03*				
X1	Solution	0.11	0.31	0.00	0.07	0.02	*0.09*			
X2	Established	0.78	0.42	0.28	0.30	0.30	-0.07	*0.17*		
X3	Importance of Customer	-0.01	1.94	0.32	0.49	0.52	-0.11	0.2	*3.75*	
X4	Distance	0.00	1.89	-0.01	0.00	0.00	-0.03	-0.04	0.06	*3.55*

Variance in the diagonal
Correlation below the diagonal

3.4.1. Impact of Solution Provision on Retention

The first outcome investigated is *Retention* (Ret_{it}) by means of the occurrence model in equation (1). As the covariance parameter is not significant, the results from the uncorrelated logistic regression model in the MEMD model are discussed (Table 3.3, top part). The model with both independent variables and control variables was found to have a superior fit due to smaller AIC (11706.23) and -2 log likelihood (henceforth, -2 ll) (11684.23; $\Delta\chi^2$ (2 d.f.) = 1180.83, p-value < .0001) in comparison to the alternative specification without control variables (Burnham & Anderson, 2004). Once the control variables are added, the independent variable, *Solution*, becomes significant. This indicates that solution provision has a significant impact on retention once accounting for the portion of variance explained by the control variables; that is, once geographical distance and importance of the customer are controlled for. It should be also noted that in the sample there are no customers with a higher probability of retention than the norm (p-value>.05) (Tooze et al., 2002).

To achieve the first research goal, the main effect of *solution* on retention was investigated. The results indicate that in the case of the customer retention outcome, providing a solution has a positive effect for all customers (β_{11}= 0.70, S.E.= 0.16, p-value < .001). In all cases, the odds of retaining a customer were found to double with solution provision (Odds Ratio=2.01). To achieve the second goal, the interaction effect between *solution* and *established* was considered. The data analysis reveals that the interaction effect is not significant (β_{13}= 0.007, S.E.= 0.10, p-value > .05). Thus, no significant difference is found in the probability of retention for new versus established customers purchasing or not purchasing solutions. These findings provide strong support for the positive impact of solution provision on retention. They also indicate that, notwithstanding the stage in the relationship lifecycle stage (early versus advanced), similar levels of retention are achieved following solution provision.

Table 3.3 : Parameter Estimates for the Occurrence and Intensity Models for Retention and Total Sales

Variable Name (Parameter)	Uncorrelated Estimate (S.E.)	
Occurrence Model for *Ret_{it}*		
Intercept (β_{10})	-0.03 (0.08)	n.s.
Solution (β_{11})	0.70 (0.16)	***
Established(β_{12})	1.03 (0.07)	***
Solution * Established (β_{13})	0.007 (0.10).	n.s.
Importance of customer (β_{14})	0.44 (0.02)	***
Distance (β_{15})	-0.03 (0.02)	**
Time Fixed Effect $_1$ (α_{1t})	Yes	
σ_1^2	-0.03 (0.08)	n.s.
Intensity Model for *$TotSales_{it}$*		
Intercept (β_{21})	6.69 (0.04)	***
Solution (β_{21})	0.79 (0.10)	***
Established(β_{22})	0.28 (0.04)	***
Solution * Established (β_{23})	-0.40 (0.11)	**
Importance of customer (β_{24})	0.28 (0.01)	***
Distance (β_{25})	0.02 (0.01)	**
Time Fixed Effect $_2$ (α_{2t})	Yes	
σ_e^2	0.69 (0.02)	***
σ_2^2	0.96 (0.05)	***
Fit Statistics	**Value**	
AIC (Occurrence Model)	11706.23	
AIC (Intensity Model)	130600.10	
-2 ll (Occurrence Model)	11684.23	
-2 ll (Intensity Model)	130576.10	

* p-value<.10; ** p-value<.05; *** p-value <.001; n.s. Not significant

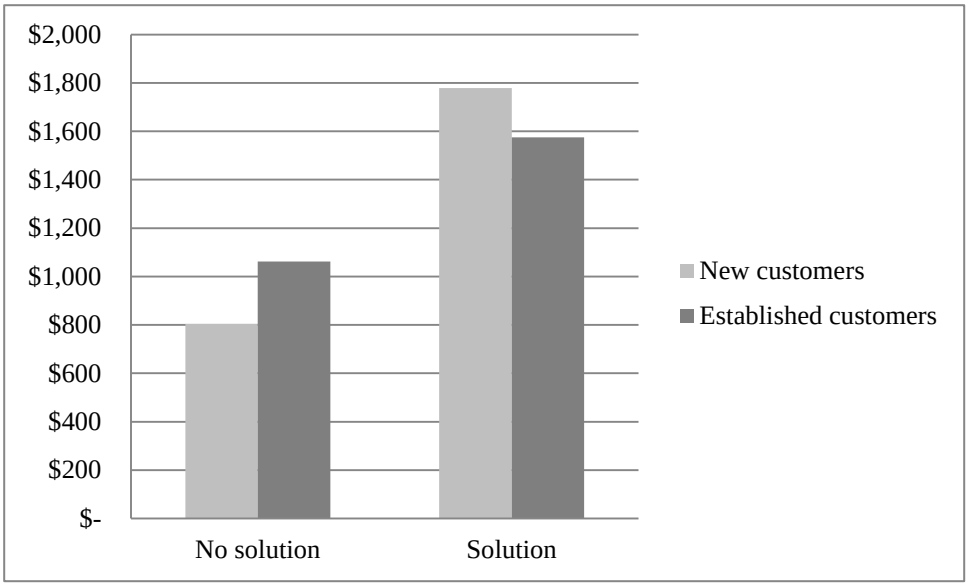
3.4.2. Impact of Solution Provision on Total Sales Volume

The second outcome investigated is *total sales* volume (*$TotSales_{it}$*) by means of the intensity model in equation (2). The results are displayed in Table 3.3 (bottom part).

The covariance parameter was found to be not significant ($\rho\ \sigma_1^2\sigma_2^2$ = -0.07, S.E. = 0.08, p-value > .05), indicating that there is no association between the error terms in the occurrence and the intensity model. In other words, *LabelCo* customers with a greater probability to be retained do not consistently have a higher mean of total sales volume, after accounting for covariate differences.

To achieve the first goal, the main effect of *solution* on total sales was investigated. The results indicate that there is a positive, significant effect of solutions on the dependent variable of interest (β_{21}= 0.79, S.E. = 0.10, p-value < .001). To achieve the second goal, the interaction effect between *solution* and *established* was considered. The data analysis reveals that the interaction term is significant (β_{23}= -0.40, S.E.=0.11, p-value < .05). This indicates that differences exist in terms of the impact of solution on total sales, depending on whether a customer is new or established. As illustrated in exhibit 3.1, solution provision reduces the difference in total sales between new and established customers. The comparison of the means for an average new versus established customer purchasing a solution or not reveals that recent customers benefit more from solution provision than established ones. Upon solution provision at year *t minus 1*, sales to new customers in year *t* increase by +121% (New|Solution = 1,778.45 $ > New|No Solution = 804.80 $, p-value < .0001), compared to +48% for established customers (Established|Solution = 1,575.46 $ > Established|No Solution = 1,062.31 $, p-value < .0001). These findings provide strong support for: (1) the positive impact of solution provision on total sales; and (2) the stronger effect of solution provision on total sales amount for new customers, thus supporting the 'solution as acceleration' explanation.

Exhibit 3.1 : Effect of Solution Provision on Total Sales at Time t for New versus Established Customers



Note: Results are displayed for Total Sales (uncorrelated model) at fiscal year 2010/2011 for an average customer at an average distance from *LabelCo* having purchased or not solutions during fiscal year 2009/2010.

3.4.3. Impact of Solution Provision on Cross-selling Volume

The third and final outcome investigated is the *cross-selling* volume ($CrossSelling_{it}$), by means of the intensity model in equation (2). The results are displayed in Table 3.4 (bottom part). The model with correlated errors is retained over the one with uncorrelated errors because of its better fit ($AIC_{Uncorrelated}$= 139427; $AIC_{Correlated}$= 139419.6; $-2ll_{Uncorrelated}$= 139381; $-2ll_{Correlated}$=139371.6; $\Delta\chi^2$(1 d.f.)= 9.4; p-value<.001). The covariance parameter is significant ($\rho\ \sigma_1^2\sigma_2^2$ =-0.30, S.E.= 0.07, p-value<.0001) and *rho* yields a value of -0.3688. This indicates a significant, but moderate negative, association between the error terms of the probability of being retained as a customer in product categories other than solution and the amount of these purchases.

Table 3.4: Parameter Estimates for Occurrence and Intensity Models for Cross Selling

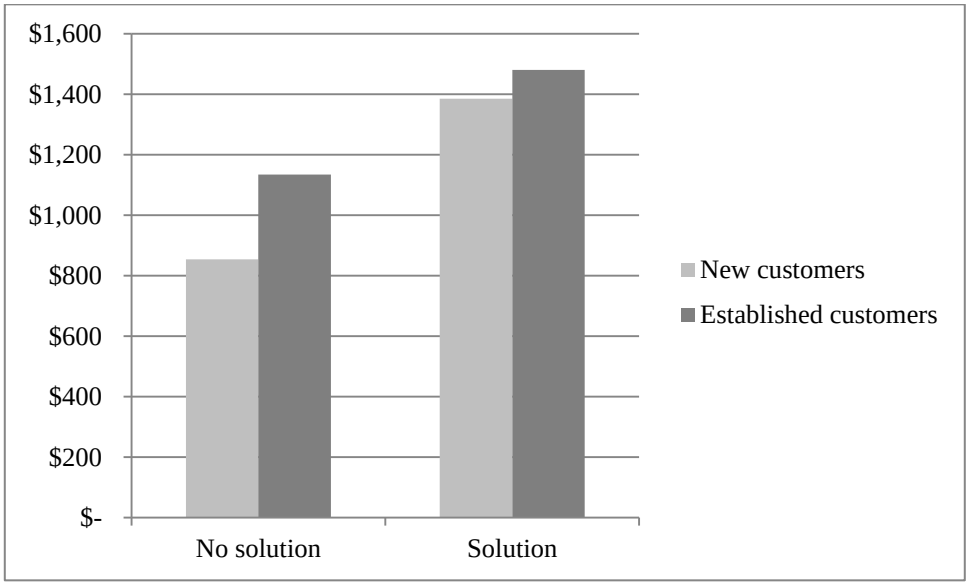
Variable Name (Parameter)	Uncorrelated Estimate (S.E.)		Correlated Estimate (S.E.)	
Occurrence Model for *CrossSelling*$_{it}$				
Intercept (β_{30})	-0.02 (0.08)	n.s.	0.0008 (0.08)	n.s.
Solution (β_{31})	0.17 (0.17)	n.s.	0.22 (0.17)	n.s.
Established(β_{32})	1.03 (0.06)	***	1.02 (0.06)	***
Solution * Established (β_{33})	0.13 (0.21)	n.s.	0.21 (0.21)	n.s.
Importance of customer (β_{34})	0.48 (0.02)	***	0.54 (0.02)	***
Distance (β_{35})	-0.04 (0.02)	**	-0.04 (0.01)	***
Time Fixed Effect $_1$ (α_{1t})	yes		yes	
σ_1^2	1.03 (0.13)	***	0.85 (0.11)	***
Intensity Model for *CrossSelling*$_{it}$				
Intercept (β_{41})	6.64 (0.04)	***	6.75 (0.05)	***
Solution (β_{41})	0.49 (0.10)	***	0.48 (0.10)	***
Established(β_{42})	0.27 (0.04)	***	0.28 (0.04)	***
Solution * Established (β_{43})	-0.22 (0.11)	**	-0.22 (0.11)	**
Importance of customer (β_{44})	0.34 (0.01)	***	0.33 (0.01)	***
Distance (β_{45})	0.03 (0.01)	**	0.03 (0.01)	**
Time Fixed Effect $_2$ (α_{2t})	yes		yes	
σ_e^2	0.67 (0.02)	***	0.67 (0.02)	***
σ_2^2	0.77 (0.05)	***	0.78 (0.05)	***
$\rho\ \sigma_1^2\sigma_2^2$	---		-0.30 (0.07)	***
			($\rho = -0.3688$)	
Fit Statistics	**Value**		**Value**	
AIC	139414.2		139405.9	
-2 ll	139368.2		139357.9	
Δ -2 ll			-10.3	***

* p-value<.10; ** p-value<.05; *** p-value <.001; n.s. Not significant

In relation to the first goal, the main effect of *solution* on cross-selling sales was investigated. The results indicate that there is a significant and positive effect of solution on the dependent variable of interest (β_{41}= 0.48, S.E.= 0.10, p-value < .001). To achieve the second goal, the interaction effect between *solution* and *established* was considered. The data analysis reveals that the interaction term is significant (β_{43}=

-0.22, S.E.= 0.11, p-value<.05), suggesting that the positive effect of solution provision on cross-selling varies depending on the stage in the relationship lifecycle. As in the case of total sales, solution provision has the effect of reducing the gap in cross-selling volume between new and established customers (Exhibit 3.2). By means of planned contrasts, the means of cross-selling volume at year *t* are compared for a new and established customer purchasing or not purchasing solutions in the previous year. Upon solution provision at year *t minus 1*, the cross-selling outcome related to new customers in year *t* increases by 62% (New|Solution = 1,384.78$ > New|No Solution = 853.80 $, p-value < .0001), compared to +30% for established ones (Established|Solution=1,479.71 $ > Established|No Solution=1,113.88 $, p-value < .0001). These findings provide strong support for the positive impact of solution provision on cross-selling sales. They further indicate that there is a higher increase in cross-selling volume resulting from new customers purchasing solutions than from established customers. This supports the 'solution as acceleration' explanation.

Exhibit 3.2 : Effect of Solution Provision on Cross-selling Sales at Time t for New versus Established Customers



Note: Results are displayed for Cross-selling amount (correlated model) at fiscal year 2010/2011 for an average customer at an average distance from *LabelCo* having purchased or not solutions during fiscal year 2009/2010.

3.4.4. Robustness Check

In order to assess the robustness of the results, several actions were undertaken. First, the coefficients of the correlated and uncorrelated specifications of the occurrence and intensity models in the MEMD were compared. Second, level of customer retention and total sales were calculated two years after the solution provision (year *t+1*), in addition to the one-year time interval reported in the results section (year *t*). Finally, alternative specifications of the independent variables were tested. For *Solution*, rather than the binary variable, a semi-continuous variable consisting of the dollar amount of solution purchases was tested. For *Established*, two additional specifications of the current operationalization were tested in addition to the four-year window: a three-year and a two-year window. In addition, the variable *Established* was operationalized as the sum of the years of activity of customer *i* over a four-year window. Overall (Table 3.5), similar patterns in terms of sign of parameters and significance levels were detected. Even when different scales are used (e.g., continuous variable for *Solution* or sum of years of activity for *Established* rather than binary specifications), the shape of the function is analogous to the one in the baseline model. This provides support to the robustness of the results.

Table 3.5: Robustness Checks for Retention, Total Sales and Cross-selling

3.5.1. Retention	**Solution**		**Established**		**Solution x Established**	
	Beta (S.E.)		**Beta (S.E.)**		**Beta (S.E.)**	
Baseline model at year *t*[a]	0.70 (0.16)	***	1.03 (0.07)	***	0.007 (0.21)	n.s.
Main model at year *t plus1*	0.11 (0.18)	n.s.	0.72 (0.07)	***	0.17 (0.21)	n.s.
Established as binary, three-year window	0.68 (0.16)	***	1.07 (0.06)	***	0.014 (0.20)	n.s.
Established as binary, two-year window	0.56 (0.13)	***	1.12 (0.06)	***	0.02 (0.18)	n.s.
Established as sum of years of activity, four-year window	0.57 (0.13)	***	0.47 (0.02)	***	0.03 (0.05)	n.s.
Solution as continuous variable	0.09 (0.02)	***	1.04 (0.06)	***	0.02 (0.03)	n.s.

3.5.2. Total Sales	Solution		Established		Solution x Established	
	Beta (S.E.)		Beta (S.E.)		Beta (S.E.)	
Baseline model at year t[a]	0.79 (0.10)	***	0.28 (0.04)	***	-0.40 (0.11)	**
Main model at year t plus1	0.59 (0.13)	***	0.21 (0.05)	***	-0.29 (0.14)	**
Established as binary, three-year window	0.79 (0.10)	***	0.29 (0.04)	***	-0.40 (0.10)	***
Established as binary, two-year window	0.95 (0.09)	***	0.31 (0.03)	***	-0.62 (0.1)	***
Established as sum of years of activity, four-year window	0.81 (0.08)	***	0.14 (0.01)	***	-0.13 (0.03)	***
Solution as continuous variable	0.1 (0.01)	***	0.24 (0.04)	***	-0.05 (0.01)	***

3.5.3. Cross-selling	Solution		Established		Solution x Established	
	Beta (S.E.)		Beta (S.E.)		Beta (S.E.)	
Baseline model at year t[a]	0.48 (0.10)	***	0.28 (0.04)	***	-0.22 (0.11)	**
Main model at year t plus1	0.53 (0.14)	***	0.22 (0.05)	***	0.04 (0.15)	n.s.
Established as binary, three-year window	0.48 (0.10)	***	0.30 (0.04)	***	-0.22 (0.11)	**
Established as binary, two-year window	0.55 (0.10)	***	0.30 (0.03)	***	-0.30 (0.10)	***
Established as sum of years of activity, four-year window	0.17 (0.01)	***	0.14 (0.01)	***	-0.07 (0.03)	***
Solution as continuous variable	0.06 (0.01)	***	0.26 (0.04)	***	-0.03 (0.01)	**

[a] Dependent variables were measured at year *t*; *Solution* was operationalized as a binary variable; *Established* was operationalized as a binary variable.
* p-value<.10; ** p-value<.05; *** p-value <.001; n.s. Not significant

3.5. Discussion

The academic and business literature refers to the importance of solution provision for ensuring B-to-B customer satisfaction (Foote et al., 2001; Miller et al., 2002; Sawhney, 2006). The current research is an attempt to address two important knowledge gaps in this literature. The first is the lack of empirical evidence to

confirm the link between solution provision and superior performance by suppliers (Day, 2004; G. Lilien et al., 2010; Nordin & Kowalkowski, 2010; Sawhney, 2006). The second is to resolve the ambiguity regarding whether, beyond the initial monetary value of a given sale, solution provision leads to higher performance outcomes for suppliers when this is directed at customers who are at an earlier as opposed to a more advanced stage in the relationship lifecycle. We develop a model based on theory relating to the process-centric view of solutions (Tuli et al., 2007) and to the interorganizational relationship lifecycle (Dwyer et al., 1987; Jap & Anderson, 2007). We first test whether customer solution provision produces higher gains in terms of retention, total sales and cross-selling compared to the sale of stand-alone products/services. We then analyze whether solutions provided for established customers who are at an advanced stage in the relationship lifecycle (i.e., 'solution as leverage') lead to greater gains for suppliers than when they are directed at new customers who are at an early stage of this lifecycle (i.e., 'solution as accelerator'). The results of the longitudinal analysis presented in this article provide important insights. In addition to supporting the claims in the extant literature that there is a positive link between solution provision and outcomes for suppliers, the findings offer valuable insight to the ambiguity in the literature in that they provide support for the 'solution as accelerator' explanation. The results suggest that suppliers obtain higher gains in terms of *total sales* and *cross-selling* when solutions are targeted at new customers, whereas both new and established customers are equally relevant when it comes to customer *retention*. These outcomes and their implications for both research and practice are further detailed below.

3.5.1. Implications for Researchers

The research presented in this article makes three main research contributions, two at the substantive level and one at the methodological level. The first substantive contribution is that the research findings presented here are of an empirical nature and thus go beyond the anecdotal evidence used in the extant literature to support the

claims regarding whether customer solution provision benefits suppliers. By means of objective sales data, this research finds support for the positive impact of solutions on performance-related outcomes (Bonney & Williams, 2009; Foote et al., 2001; Miller et al., 2002). To the best our knowledge, this article is the first to use objective data to support the positive effect of solutions on customer retention and sales in empirical and quantitative terms.

The second substantive contribution is that the investigation sheds light on the moderating role of the stage in the customer-supplier relationship lifecycle in impacting performance-related outcomes. This contribution arises from the analysis and integration of two independent streams of literature; that is, the process-centric view of solutions (Tuli et al., 2007) and the interorganizational relationship lifecycle (Dwyer et al., 1987; Jap & Anderson, 2007). In the case of both new and recent customers, solution provision was found to double the odds of customer *retention*. Thus, the research confirms that solution provision by suppliers does increase the likelihood of a continuing relationship with customers, as noted in the literature (Foote et al., 2001; Sawhney, 2006). As retention is found to increase also for customers who are at an early stage of the relationship lifecycle, this finding suggests that a long-term relationship is not necessarily a precondition for achieving positive outcomes from solution provision (as suggested by the 'solution as leverage' explanation).

More important, this study finds differences between recent and established customers when it comes to achieving enhanced sales and cross-selling volumes by suppliers. When purchasing stand-alone products/services, established customers show higher sales levels than new customers. This pattern, however, is reversed when solution provision is involved. According to our findings, suppliers selling solutions to new customers achieve significantly higher gains in total sales and cross-selling volumes than when this effort targets current customers. This difference can be explained in terms of the level of interaction involved in each type of purchase together with what it takes to move a new customer to a more advanced stage in the

relationship lifecycle. The simpler transactions require less frequent interactions, while solutions entail repeated interactions between the actors involved (Bharadwaj et al., 2009; Tuli et al., 2007). Moreover, marketing theory indicates that several interactions are required for a new customer-supplier relationship to evolve and to lead to sustained sales levels (Reinartz & Kumar, 2000; Venkatesan et al., 2012); and that greater information sharing occurs only after repeated interactions over time (Gulati, 1995; Kalwani & Narayandas, 1995). Because the different stages of the solution provision process multiply the opportunities for such interactions, they have the effect of accelerating the development of the customer-supplier relationship itself as well as the higher outcomes typically associated with customers who are at a more advanced stage in the relationship lifecycle.

The underlying mechanisms for the 'solution as acceleration' effect can be further understood thanks to insights that come from the literature on the economics of information (Singh, 1985; Stigler, 1961). According to this theory, at initial stages of a relationship, there are increasing returns to the information gathered in terms of uncertainty reduction (Singh, 1985; Stigler, 1961). In a new relationship, due to the limited experience with one another (Dwyer et al., 1987; Jap & Anderson, 2007), initial interactions between supplier and customer prove to be more informative than later ones, in accordance with the law of decreasing marginal returns of experience (Dutton & Thomas, 1984; Yelle, 1979). Using this theory as a lens suggests that the 'solution as accelerator' effect may result from the fact that, during initial stages of the relationship, solution provision helps partners to gather meaningful information and to learn about each other at a faster pace. This leads to a better understanding of the needs of each partner, improving the supplier's overall knowledge of the customer and enhancing the ability to provide a more highly tailored and more valuable offering in the future.

The results regarding solution provision outcomes are also aligned with relational learning theory, which states that mutual benefits arise from the learning that occurs in an inter-organizational relationship (Selnes & Sallis, 2003). According

to this theory, "from suppliers' standpoint, better knowledge of the customer enables them to provide and develop more valuable products. Likewise, with better knowledge of suppliers, customers are better able to choose products [and] solutions that satisfy their needs and wants" (Selnes & Sallis, 2003, p. 80). To achieve such benefits, relationship learning requires two key elements: information exchange and a common learning arena (Selnes & Sallis, 2003). Our research indicates that, when viewed as a process-centric relationship, solution provision is instrumental in accounting for these key elements: the first, because the process itself relies on high information exchange between the parties and; the second, because the response to customer needs via a solution provides the common learning arena.

The third contribution is of a *methodological* nature. To the best of our knowledge, this study is the first to introduce to marketing the mixed-effect, mixed-distribution (MEMD) model developed in biostatistics for repeated measures data (Tooze et al., 2002). In the research, the MEMD model is adapted to simultaneously estimate retention through the discrete time survival approach described by Singer and Willett (1991) and the sales levels contingent on retention. It is our belief that this analytical approach can be used to model other dual outcomes experienced by companies in their daily marketing-related activities, as will be discussed below.

3.5.2. Implications for Managers

Concerning marketing practice, the present study brings to managers' attention that solution provision can be used to serve different purposes beyond addressing a specific customer need. Based on the results of the study, the positive effect of solution provision on customer retention and sales that is discussed in the literature (Miller et al., 2002; Sawhney, 2006), now finds a more solid grounding. Furthermore, viewing the relational dimension as the underlying driver for positive outcome effects of solution provision (Tuli et al., 2007), this research suggests certain insights for managers depending on the goal pursued by the supplier with respect to specific

categories of customers purchasing solutions and to the particular skills that might be in need of further development to obtain these outcomes.

When the goal of managers is to extend the duration of the relationship with the targeted customer (Aurier & N'Goala, 2010; Bolton et al., 2004; Kamakura et al., 2005), suppliers can focus on solutions provision to increase customer retention (Sawhney, 2006). Our results show that such an approach is beneficial in the case of both new and established customers. Once they buy a solution, customers have a higher likelihood to repurchase in the future from the solution provider. Therefore, based on our findings, managers who increase their efforts with regard to solution provision can expect this approach to lead to higher customer retention regardless of their stage in the relationship lifecycle.

When the goal of managers is to increase the usage level of products and services (Aurier & N'Goala, 2010; Bolton et al., 2004; Kamakura et al., 2005), the results of this research show that solution provision can be particularly beneficial when directed at new customers. Suppliers were found to obtain higher future sales from new customers after they purchased a solution rather than when they bought a stand-alone product, an increase that occurs both for total sales and for cross-selling opportunities. This result suggests that managers who aim at unlocking the growth potential of new customers can use solution provision to increase the 'share of wallet' of these firms at a faster pace than what they would achieve in the case of traditional stand-alone product purchases. For established customers, providing effective solutions also leads to positive outcomes. Suppliers can use solutions to further develop these established relationships and capitalize on, or 'leverage', the insight and knowledge they already have about these customers. However, the extent of the sales increase is lower for established (versus new customers). We argue that such a difference is due to the fact that new customers present greater room for knowledge enhancement and solution improvement, and hence a greater potential for growth.

Based on these considerations, this research invites managers of B-to-B companies to view solution provision as an important opportunity to learn about the

customer as a partner, and vice versa (as per relationship learning theory; Selnes & Sallis, 2003). For customers, the solution provision process can be useful because it allows them to learn about supplier expertise and facilitates supplier choice. For supplier firms, a commitment to solution provision is even more important, because it ensures an in-depth understanding of customers, allows for better tailoring of offerings and sets the stage for long-term growth. Therefore, the current research supports the importance of relational training for all those staff members involved in solution provision. In line with previous literature on inter-organizational relationships (Palmatier, Dant, & Grewal, 2007) together with our research findings, the development of relational competencies such as trustworthiness and communication skills is of particular importance when it comes to information sharing by which to unlock the growth potential inherent in relationships with new customers. Our research results clearly indicate that deploying these competences especially when interacting with new customers facilitates not only the relationship itself but accelerates its future performance potential.

3.6. Limitations and Future Research Avenues

By addressing the call for a better understanding of the outcomes of solutions, this research contributes to the growing body of knowledge on the topic of solution provision. While being the first to provide empirical evidence regarding positive outcomes of solutions and the impact of solutions depending on the type of customer targeted, this research also has certain *limitations* that should be noted and that suggest directions for future research.

To begin, the study uses a single-firm approach of a relatively representative SME. While this is a widespread practice when investigating the outcomes of marketing actions in B-to-B scenarios (e.g., Niraj, Gupta, & Narasimhan, 2001; Tarasi, Bolton, Hutt, & Walker, 2011) and allows for "controlling for contextual effects and [minimizing] possible contingencies common in cross-industrial research"

(Singh, Goolsby, & Rhoads, 1994, p. 563), it limits the generalizability of the findings beyond the SME context. Future replications from both a larger pool of industrial SME solution providers and from larger companies would strengthen the conclusions of this study, in particular of the 'solution as accelerator' explanation.

Although one of the strengths of the study is access to substantial archival data from a B-to-B firm—a database that is often hard to access (Lilien & Grewal, 2012) but proven to be particularly valuable for empirically grounded studies (Lilien et al., 2010; Nordin & Kowalkowski, 2010; Sawhney, 2006)—the data had the effect of orienting the measures used in the study towards observable indicators that could be derived from the sales database. While coherent with the goals of this investigation, these measures provide only an initial grasp of the phenomenon and could be fruitfully expanded.

First, the solution provision process was identified starting from the invoice describing the type of purchase. While reflecting the solution as a whole, the invoice information does not capture what happens at the different stages of the solution provision process. A future survey-based research could map the four relational processes of solution provision targeting different categories of customers. Such a research could compare the levels of relational properties important for solution provision—such as trust, commitment, or information sharing norms (Morgan & Hunt, 1994; Palmatier, Dant, et al., 2007)—before, during and after each stage of the solution provision process for different categories of customers. Additional support to the 'solution as accelerator' explanation will come if these properties show a significant increase during solution provision targeting new customers.

Second, the current study did not distinguish among solution provision processes in terms of their effectiveness. Future research could incorporate the variables identified in the Tuli et al. (2007) study and investigate their impact on performance-related outcomes depending on the customer relationship lifecycle stage. To further pursue the investigation into the relational nature of solutions, researchers could start by looking at a variable such as 'customer interactor stability', defined as

"the duration for which customer interactors (e.g., sales personnel, support staff) are assigned to a customer" (Tuli et al., 2007, p. 10). Customers at early stages in the relationship lifecycle might need higher stability in the interaction with the solution provider in order to facilitate the level of information sharing that leads to the acceleration effect. In turn, customers at more advanced stages might be less responsive to stability due to the more solid relationship with the supplier.

In addition, the MEMD model can be an effective tool to measure whether specific marketing actions associated with solution provision affect the occurrence and level of sales, purchases or investments. For example, at the firm level, the MEMD model could be used to determine not only which factors trigger the decision to invest in an improvement of the relational competence of the salesforce involved in solution provision, but also how these factors impact the amount of such investments once they are made. At the customer level, the MEMD model could be used to capture the effect of improved relational competence of the salesforce on customers' purchase levels, contingent on the occurrence of the purchase.

Finally, this research dichotomized the relationship lifecycle into early and advanced stages to distinguish between new and existing customers. The relationship lifecycle stage measures developed by Jap and Anderson (2007) could be used in future research to identify more precisely the different stages and to compare the levels of performance-related outcomes in each. Especially by breaking down the established customer category, it might be possible to determine whether solutions can be used to prevent or slow down the decline of a mature relationship, thanks to the relational component involved in the solution provision process.

3.7. References

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Chapter 4.

The Effect of Channel Awards on Firms' Value

Abstract

By relying on signaling theory, the authors conduct an event study to determine the effect of announcements of channel awards received by U.S. public companies during the period 1996 to 2012 on the firm value of the recipient. The analysis shows that there is no positive abnormal return associated with channel award announcements. There appears to be no difference regarding the source of the award (i.e., a public or private company versus an external stakeholder organization). However, the stock return is more positive when channel awards are given during dedicated events and to firms that operate in more concentrated markets. These results suggest that awards are valued by investors for the visibility of the recognition in front of the relevant players in the industry and for the differentiation potential in concentrated markets. These findings contribute to the research at the marketing-finance interface by addressing the gap at the level of the financial valuation of channel management activities.

Keywords: Event analysis, awards, channel management, marketing-finance interface

4.1. Introduction

Awards, prizes and recognitions are widespread in the business sector (Azadegan & Pai, 2008; Frey & Neckermann, 2008). IBM[4], Oracle[5] and Microsoft[6] regularly honor their distribution partners with awards such as "Distributor of the Year" or "Best Distributor". In 2012, Industrial Distribution, a leading industry magazine, covered several awards given by companies such as Evergreen, DPA Buying Group, Omron Industrial Automation, or Dow Corning, to their channel partners. The "Distributor of the Year" or "Best Distributor" awards are a manifestation of industrial companies' reward power, increase the motivation of downstream partners, and recognize exceptional performance (Anderson, Narus, & Narayandas, 2008; Gilliland & Bello, 2001). At the same time, top performing industrial distributors are also recognized by industrial associations and magazines such as, for example, Business Technology Association[7] or CRN[8]. Whereas awards given by different organizations might differ in the underlying criteria (Azadegan & Pai, 2008; Hendricks & Singhal, 1996), they share similar functions as incentives that motivate the parties involved in the relationship (Gilliland & Bello, 2001; Prendergast, 1999).

Frey and Neckermann (2008) underline how awards have an inherent social recognition dimension that gives visibility beyond the specific relationships. Thus, an important consequence of this visibility is the transformation of awards into signals to outsiders (Basuroy, Desai, & Talukdar, 2006; Connelly, Certo, Ireland, & Reutzel, 2011). As signals, awards in domains as varied as quality improvement programs, human resources management or information technologies are found to have a positive effect on the awardees' market value by changing investors' assessment

[4] https://www-304.ibm.com/partnerworld/wps/servlet/ContentHandler/pw_com_prb_2013_beacon_choice_awards , accessed on December 2, 2013.
[5] http://www.oracle.com/us/corporate/press/1859570 , accessed on December 2, 2013.
[6] http://www.microsoft.ca/IMPACT , accessed on December 2, 2013.
[7] http://www.bta.org/, accessed on December 2, 2013.
[8] http://www.crn.com/, accessed on December 2, 2013.

(Arthur & Cook, 2009; Hendricks & Singhal, 1996; Konchitchki & O'Leary, 2011). The specific features recognized by these awards are evaluated in terms of their contribution to increase future cash flows and to reduce recipients' risk (Hendricks & Singhal, 1996). The extant marketing channels literature has not yet addressed this signaling function of channel awards or their financial impact, as the main focus has been on the "within-channel" functions. In fact, the research at the marketing-finance interface that investigates the financial impact of marketing activities has so far devoted little attention to distribution and channel topics (Gielens & Geyskens, 2012; Srinivasan & Hanssens, 2009). This precludes a clear understanding of the impact on firms' market value of current practices in the domain of channel awards.

This article addresses these gaps by means of an original empirical investigation of the financial impact of channel awards. The theoretical foundation is signaling theory (Connelly et al., 2011; Spence, 1973). In line with previous research on awards as signals (Balasubramanian, Mathur, & Thakur, 2005; Basuroy et al., 2006), channel awards are conceptualized as a signal about the channel relationship sent by insiders—i.e., the award-giver, typically the supplier or an external stakeholder organization—to external stakeholders—i.e., shareholders and investors. This research investigates not only the main effect of channel awards as signals, but also their varying effectiveness depending on three contingencies reflecting current practices: (1) who sends the signal (i.e., private or public company versus external stakeholder organization giving the award); (2) how (i.e. during a dedicated event), and (3) in what context (i.e., to recipients operating under varying levels of industry concentration). The methodology used is the event study, which isolates the impact of a specific event on stock market performance, reflecting the reactions of investors (Binder, 1998; Fama, Fisher, Jensen, & Roll, 1969; MacKinlay, 1997). Such a methodology is consistent with the function of channel awards as signals that make the information about the channel relationship known to investors as a specific category of external stakeholders. The data analysis is conducted on a unique database of 178 announcements of channel awards received by industrial distributors

traded on U.S. stock markets during the period 1996 to 2012, matched with financial indicators from the Center for Research on Security Prices (henceforth, CRSP), Compustat, and I/B/E/S.

This empirical investigation sheds light on two important questions not yet covered in the marketing literature with respect to the financial impact of channel awards. First, it documents investors' reactions to channel awards by estimating the abnormal change in the stock price in the two days following their announcements. Contrary to expectations, the findings suggest that channel awards do not translate into a general gain for the recipient's stock. Second, the results of the cross-sectional robust regression show how the stock price is affected by specific contingencies. According to the results, market reactions do not appear to be influenced by the source of the award (i.e., who sends the signal). In other words, the reaction of the market is similar whether the prize is given by an external stakeholder organization, a private company, or a public company. Investors do, however, positively value channel related-awards when these are given within dedicated events (i.e., how the award is given). Finally, the market reaction is more positive for awardees operating in more concentrated industries (i.e., context of the recipient).

These findings make important contributions to both marketing theory and practice. From a theoretical perspective, this article enriches the growing body of research at the marketing-finance interface that typically restricts itself to channel design issues (Geyskens, Gielens, & Dekimpe, 2002; Gielens, Van de Gucht, Steenkamp, & Dekimpe, 2008; Lee & Grewal, 2004; Srinivasan, 2006). Furthermore, the findings show that investors seem to place more value on the social recognition function of awards, as underlined by the positive impact of awards given at dedicated events. From a managerial perspective, the results highlight that, on top of being an internal incentive, channel awards may have an impact on the market value of the awardee under specific conditions. As awards given during events appear to receive a premium return from investors, award-giving companies might emphasize these types of gatherings to showcase their awards and with them, the importance they place on

certain channel relationships. Similarly, award-winning companies operating in more concentrated industries appear to benefit more from the channel award as this enhances their differentiation.

4.2. Conceptual Framework

4.2.1. The Financial Impact of Channel Awards

Channel awards are defined as awards that are given by an organization (this being a public or private company, or external stakeholder organization) to downstream marketing channel members, such as wholesalers, distributors or retailers. This article focuses on the signaling function that this category of industrial awards fulfills, in line with previous marketing and management studies drawing on signaling theory (Basuroy et al., 2006; Connelly et al., 2011; Spence, 1973).

According to signaling theory, there is a gap in terms of access to information between insiders (i.e., individuals or organizations) and outsiders (i.e., consumers, investors, other organizations). To reduce this information asymmetry, insiders can send signals through specific actions to outsiders. Outsiders rely on these signals to infer specific attributes about the insiders that would otherwise be invisible (Connelly et al., 2011; Spence, 1973; Stiglitz, 2002). As signals, awards allow outsiders to distinguish products or organizations of higher quality (that is, those recognized by the awards) from those of lower quality (that is, those not recognized by awards) (Basuroy et al., 2006). For example, in the movie industry, Academy Awards have been viewed as signals of product quality that reduce the uncertainty associated with the product novelty for consumers (Basuroy et al., 2006; Hadida, 2009). Beyond documenting the signaling function of awards, past research has also shown the impact of these signals on performance. Scholars have looked at the relationship between awards and company (or product) performance in different domains and

typically found a positive relationship (Arthur & Cook, 2009; Balasubramanian et al., 2005; Gemser, Leenders, & Wijnberg, 2008; Hendricks & Singhal, 1996).

Regarding how the marketing literature approaches channel awards, there seems to be an emphasis on the "within-channel" functions that awards play inside specific channel relationships. Channel awards are part of channel management activities (Coughlan, Anderson, Stern, & El-Ansary, 2006). These awards are associated with relationship appraisal dynamics as they result from the evaluation of partners' performance (Barrat & Hatton, 2004; Hanmer-Lloyd, 1996). As manifestations of the reward power exerted by the supplier (Coughlan et al., 2006; French Jr. & Raven, 1959), awards belong in the non-monetary category of channel incentives. Channel incentives can be monetary or non-monetary and contribute to the alignment of the interests of channel members (Anderson et al., 2008; Coughlan et al., 2006; Gielens & Geyskens, 2012; Gilliland & Bello, 2001).

Yet, less attention has been devoted to the implications of these "within-channel" functions beyond the specific relationship in terms of the signaling function of awards. In fact, by analogy with previous studies on awards as signals (Basuroy et al., 2006), it could be argued that channel awards can allow investors to identify those companies that are performing well as distributors, that have a positive relationship with their partners and that excel over their competitors. This information may lead to revised expectations regarding awardees' performance, as suggested by awards in other business domains (Arthur & Cook, 2009; Balasubramanian et al., 2005; Gemser et al., 2008; Hendricks & Singhal, 1996).

The extant body of knowledge merely provides initial guidance in addressing the financial implications of channel awards as signals (see Table 4.1). Within the stream of research on the marketing-finance interface (Srinivasan & Hanssens, 2009), the area of distribution has received limited attention, despite its importance in business-to-business theory and practice (Gielens & Geyskens, 2012). In their recent review, Gielens and Geyskens (2012) present only a handful of studies that focus on distribution aspects, such as the addition of the internet channel or dual distribution

settings (Geyskens et al., 2002; Gielens et al., 2008; Lee & Grewal, 2004; Srinivasan, 2006). However, these studies cover mostly channel design aspects, related to the structure of the channel of distribution (see Table 4.1). Channel structure represents only one aspect of distribution decisions that also involve subsequent channel management and implementation, an area to which channel awards belong (Coughlan et al., 2006). Furthermore, research in related business domains such as logistics and operations management provides limited elements for understanding the signaling functions of channel awards. Only two studies were found that indirectly addressed the financial impact of distribution-related activities (Azadegan & Pai, 2008; Filbeck, Gorman, Greenlee, & Speh, 2005). Azadegan and Pai (2008) investigated the impact of operational awards on long-term performance indicators and Filbeck et al. (2005) conducted an event study on supply chain management tools. These studies suggest that awards and activities conducted to acknowledge the importance of downstream partners might be valuable, but fall short of providing a comprehensive account of the specificities of the channel relationship.

Table 4.1 : Selected Related Research and Comparison to Current Study

Authors	Topic	Distribution focus	Awards	Financial metric
Hendricks & Singhal (1999)	Impact of quality awards on performance (from companies vs. independent organizations)	--	Yes	Abnormal Stock Return
Filbeck et al. (2005)	Adoption of supply chain management product	Indirect (Supply Chain Management)	--	Abnormal Stock Return
Balasubramanian et al. (2005)	Impact of quality awards (from independent organizations)	--	Yes	Abnormal Stock Return
Azadegan & Pai (2008)	Impact of operational and product awards	Indirect (operational level)	Yes	Cost of goods sold and operating income
Geyskens et al. (2002)	Adoption of Internet as new distribution channel	Yes	--	Abnormal Stock Return
Lee & Grewal (2004)	Adoption of Internet by store-based retailers	Yes	--	Tobin's Q
Srinivasan (2006)	Dual distribution systems in franchised restaurant chains	Yes	--	Tobin's Q
Gielens et al. (2008)	Value-destroying and value-enhancing effects of Walmart entry in the UK	Yes	--	Abnormal Stock Return
Current Study	Financial impact of channel awards	Yes	Yes	Abnormal Stock Return

To sum up, the convergence in award, channel management and marketing-finance interface literatures suggests that, building on their "within-channel" function as providing incentive, channel awards might also constitute signals sent to investors that have an impact on awardee's market value. Thus, the first hypothesis tested in this study predicts a positive impact of channel awards on the awardee's market value. Recognitions, prizes and awards fall into the positive signal category typically investigated within signaling theory (Connelly et al. 2011) and they have been associated with superior performance for their recipients (Balasubramanian et al. 2005; Filbeck, Gorman, & Zhao 2013; Hendricks & Singhal 1996). Awards function not only as rewards of past accomplishments by the recipient, but also act as incentives towards future behaviors as they document positive behaviors to be repeated (Frey & Neckermann 2008). Furthermore, as awards increase loyalty between recipient and giver (Frey & Neckermann 2008), they could predict a stronger alignment of interests between channel members. As channel incentives reduce the likelihood of opportunistic behaviors (Stump & Heide 1996), awards provide investors with an indicator of higher levels of collaboration between channel members and potentially more stable revenues in the future. Thus, it is expected that:

H1: Receiving a channel award will have a positive impact on the market value of the recipients.

4.2.2. The Source of the Award

Signaling theory predicts that the characteristics of the sender of the signal affect the effectiveness of the signal itself (Connelly et al., 2011). In the context of this study, the sender is the organization presenting the channel award. In the business sector, awards are given by industrial companies, both public and private ones, as well as by external stakeholder organizations such as trade or industry associations and magazines. The extant literature recognizes that awards given by different organizations differ in terms of the criteria used for winning the award, as well as in the competition among runner-ups for the award (Azadegan & Pai, 2008; Hendricks

& Singhal, 1996). These differences are expected to convey different information to investors regarding the characteristics of the award recipient.

Gemser et al. (2008) underline the importance of taking into account the type of award source as this affects the effectiveness of awards as signals. The type of source transmitting the message (or emitting the signal) has an impact on its assessment by the target (or receiver) depending on its perceived credibility (Hovland & Weiss, 1951). In this regard, external (or third-party) sources tend to be perceived as more credible than commercial ones for a variety of decision-making tasks (Pornpitakpan, 2004; Senecal & Nantel, 2004). In the domain of quality improvement programs, Hendricks and Singhal (1996) explain the higher effectiveness of awards from external organizations in terms of their strictness and prestige, in comparison to awards distributed by companies, where the signaling function predominates. Based on these considerations, awards from external stakeholder organizations, such as industrial associations or magazines, reflect the value of a distribution intermediary recognized by a broader audience consisting of peers or experts. As such, they could be a stronger signal for investors in comparison to awards presented by individual public or private companies as these awards reflect the assessment by an individual partner. Thus, it is expected that:

> *H2: The effect of the channel award on the market value of the recipient will be higher when the source of the award is an external stakeholder organization rather than a private or public company.*

4.2.3. Awards Presented during Dedicated Events

Signaling theory predicts that the manner in which the signal is sent might contribute to its effectiveness (Connelly et al., 2011). Business-to-business companies often use events such as, for example, Cisco Partner Summit[9] or Electronic Distribution Show[10]

[9] http://www.cisco.com/web/learning/le21/le34/partnersummit/index.html/, accessed on December 2, 2013.
[10] http://edsconnects.com/, accessed on December 2, 2013.

to distribute their channel awards. The industrial marketing literature has underlined the importance of these events within the business marketing communication mix (Gopalakrishna & Lilien, 2012; Sharland & Balogh, 1996). The importance of these events is two-fold: during industrial gatherings, companies do not only sign contracts, but also exchange information and develop relationships (Bettis-Outland, Johnston, & Wilson, 2012; Sharland & Balogh, 1996). Dedicated events have therefore an intrinsic social function that influences the evolution of specific relationships and of industry dynamics (Anand & Watson, 2004; Moeran, 2010). As a consequence, the social recognition function of awards underlined by Frey and Neckermann (2008) is expected to be enhanced when awards are distributed during dedicated events, such as industry conventions, trade shows and similar industrial gatherings. These events increase the reach of the award as a signal and concretely manifest the commitment of the parties to the development of the channel relationship. Thus, it is expected that:

H3: The effect of the channel award on the market value of the recipient will be higher if the award is given during a dedicated event.

4.2.4. Awards in Concentrated Industries

According to signaling theory, the context in which the signal is sent influences its effectiveness (Connelly et al., 2011). Among the contextual factors relevant in channel settings, the growing level of industry concentration in the distribution sector is one of the strongest ones (Coughlan et al., 2006; Tompkings International, 2013). As an industry becomes more concentrated, competition among firms shifts from price-based to non-price based activities, such as advertising and innovation (Bain, 1941; Buxton, Davies, & Lyons, 1984; Ramaswamy, Gatignon, & Reibstein, 1994; Sutton, 1974). Channel awards are viewed in this study as contributing to non-price based competition because they are signals of relational resources, such as the channel relationship (cfr. Srivastava, Shervani, & Fahey, 1999). Channel awards are therefore expected to be more influential in sectors where industry concentration is higher. At the same time, the level of industry concentration affects how relationships

among distributors and manufacturers develop. When a market is concentrated, there are typically a small number of large distributors, and these often have such expectations as "being dealt with more as an employee, given direction and rewarded for good performance" (Hanmer-Lloyd, 1996, pp. 182-183). Hofer, Jin, Swanson, Waller, and Williams (2012) show that, in highly concentrated industries, the increased presence of relational elements ensures positive performance and payoff for channel members. Finally, because in a more concentrated market, the number of competing companies decreases investors have fewer firms to follow and are able to pay closer attention to signals concerning these firms. All the above considerations predict a more important role for channel awards as signals in more concentrated industries. Thus, it is expected that:

H4: The effect of the channel award on the market value of the recipient will be higher in more concentrated markets.

4.3. Methodology

This research adopts the event study methodology to investigate the effect of channel awards on recipients' market value. The event study methodology is an analytical technique originally developed in finance to examine security price behaviors around specific events with a known time stamp (Binder, 1998; Fama et al., 1969; Srinivasan & Hanssens, 2009). Over time, its statistical power and broad applicability has made the event study methodology popular also in other fields of business research such as management, information systems and marketing (Johnston, 2007; Konchitchki & O'Leary, 2011; McWilliams & Siegel, 1997; Srinivasan & Bharadwaj, 2004). Event studies are built on the efficient market hypothesis, according to which the market operates in conditions with perfect information and rational investors (Fama, 1970). Under the efficient market hypothesis, the actual stock price integrates all public information available (Fama, 1970; Srinivasan & Bharadwaj, 2004). Any unexpected event bringing new information to the market will be reflected in the stock price

(Srinivasan & Bharadwaj, 2004). The event study compares the actual stock price to the expected stock price and isolates the price reaction to the event of interest as the deviation from the returns of the market portfolio that can be attributed to investors' appraisal of the event (MacKinlay, 1997).

The event study methodology is appropriate for the present investigation because winning a channel award is an event that cannot be known in advance by investors and it has a known time stamp. The standard protocol for event studies was followed in designing and conducting this research (Binder, 1998; MacKinlay, 1997; McWilliams & Siegel, 1997) and its main steps are detailed in the following sections.

4.3.1. Definition of the Event

The event of interest in the present investigation is the channel award announced through a press release. In line with previous studies (Agrawal & Kamakura, 1995; Filbeck et al., 2005), the date of the event of interest is the date of its announcement through the press release. In this study, announcements from newswire services were retained over newspaper articles for two reasons. First, newswire usually precedes the newspaper article and usually represent the first instance in which the news about the channel award becomes available to the public, as required by signaling theory (Connelly et al., 2011). Second, press releases are produced by companies, leaving less room for potential distortion by editors of media outlets (Carter, 2006; Connelly et al., 2011).

4.3.2. Database and Measures

The sample of events for the empirical investigation was obtained by means of a two-stage search process. The initial step consisted of a detailed search of newspapers, corporate websites, and social media to identify names of channel awards for a random sample of 50 *Fortune 500* companies. The resulting keywords were used for searching press releases diffused through Business Wire and PR Newswire in Lexis

Nexis and Factiva databases because these sources are the most frequently used in event study research (Srinivasan & Bharadwaj, 2004). Exhibit 4.3 presents the detailed list of keywords used for the final search; exhibit 4.4 contains a sample announcement. The search, covering a period of 20 years (i.e., 1993-2012), led to an initial sample of 2,607 press releases. Several steps were undertaken to identify usable events (details in Table 4.2) that included the elimination of those companies experiencing potentially confounding events close to the channel award date, such as dividend announcements, mergers, or litigations (McWilliams & Siegel, 1997). After several screening stages, the final usable sample consisted of 178 press releases announcing the same number of channel awards (Table 4.3).

Table 4.2 : Details on Sample Size

Combined Lexis Nexis and Factiva Search	2,607
Unrelated announcements, Lexis Nexis and Factiva doubles, press releases containing multiple awards	-2,214
Awards received by private companies	-165
Events announced more than once	-5
Announcements by the same company on the same day	-2
Announcements impacted by other events within 5 before and after the channel award (search based on Wall Street Journal articles)	-38
Missing stock returns in CRSP	-5
Final Sample of Usable Events	**178**

Table 4.3 : Announcements of Channel Awards by Year

Year	Frequency	%	Cumulative %
1996	4	2.25	2.25
1997	3	1.69	3.93
1998	3	1.69	5.62
1999	5	2.81	8.43
2000	10	5.62	14.04
2001	12	6.74	20.79
2002	7	3.93	24.72
2003	11	6.18	30.90
2004	14	7.87	38.76
2005	10	5.62	44.38
2006	7	3.93	48.31
2007	16	8.99	57.30
2008	14	7.87	65.17
2009	17	9.55	74.72
2010	15	8.43	83.15
2011	16	8.99	92.13
2012	14	7.87	100.00

Exhibit 4.1 : List of Keywords

"top performing distributors" OR "top performing distributor" OR "distributor of the year" OR "outstanding distributor" OR "outstanding distributor partner" OR "distributor award" OR "distribution partner of the year" OR "top distributor" OR "distributor excellence award" OR "global distributor award" OR "distributor award" OR "channel partner award"

Exhibit 4.2 : Sample Press Release

April 3, 2012 Tuesday 4:45 PM GMT

Catalyst Telecom Named Americas Distributor of the Year by Aruba Networks; Distributor receives award for second year

LENGTH: 466 words

DATELINE: GREENVILLE, S.C.

Catalyst Telecom®, a sales unit of ScanSource®, Inc. (NASDAQ: SCSC), and value-added distributor of voice, video and data convergence solutions, was named Americas Distributor of the Year by Aruba Networks, a leading provider of next-generation network access solutions, during Aruba's 2012 Americas Partner Summit held in Las Vegas, NV.

Aruba awarded Catalyst Telecom based on its year-over-year growth, as well as its commitment to delivering excellent service and support for Aruba's solutions.

"Mobility opportunities abound for resellers. And by providing Aruba's products to our reseller partners, we are able to help them meet the demand for mobility solutions, while also working closely with them to uncover new opportunities. What's more, our reseller partners are taking advantage of the value-added services we can wrap around Aruba's solutions, including our configuration tool, pre-sale wireless network designs and professional services, to help them grow their business and strengthen their relationship with their end-user customers," said Mike Ferney, vice president of merchandising, Catalyst Telecom. "We are excited that Aruba recognizes us for those efforts and appreciate the hard work of our team and our partners."

"Aruba Networks and Catalyst Telecom share a vision for the future of mobility, and we are extremely pleased with the progress that we have made working toward it, together, this year," said Robert Bruce, vice president of worldwide channel sales at Aruba. "Catalyst Telecom truly distinguished itself this year."

For additional information on Catalyst Telecom, please visit www.catalysttelecom.com .

About Aruba Networks, Inc.

Aruba Networks is a leading provider of next-generation network access solutions for the mobile enterprise. The company's Mobile Virtual Enterprise (MOVE) architecture unifies wired and wireless network infrastructures into one seamless access solution for corporate headquarters, mobile business professionals, remote workers and guests. This unified approach to access networks dramatically improves productivity and lowers capital and operational costs.

About ScanSource, Inc.

ScanSource®, Inc. (NASDAQ: SCSC) is the leading international distributor of specialty technology products for resellers in North America, Latin America and Europe.

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The content of the press releases was coded according to standard procedures for textual coding. The data obtained for each recipient of a channel award from the textual coding were matched with secondary data obtained from CRSP, Compustat and I/B/E/S to complete the dataset. The complete list of the variables included in the present study is displayed in Table 4.4. For the dependent variable, the daily stock price used to compute the abnormal stock return is obtained from CRSP. With respect to the independent variables, *award given at event* and *type of award-giver* are dummy variables issued from the textual coding of the press releases; the *level of industry concentration* is computed as the Herfindahl–Hirschman index (HHI), consisting of the sum of the squared market share (based on sales from Compustat) of the top four firms operating within the same SIC code (Lee & Grewal, 2004). Several controls were added to account for the characteristics of the award, the press release and the awardee. As regards the detailed justification of the award, we coded several characteristics that are associated with channel settings, such as the relationship between manufacturers and distributors (Anderson & Narus, 1990; Palmatier, Dant, & Grewal, 2007), distributors' involvement in innovation-related activities (Geyskens et al., 2002; Yoon & Lilien, 1988) or the tasks performed by distributors at the levels of sales, promotion, logistics and technical support (Rosenbloom, 2013). Firm characteristics, such as firm size, number of analysts' estimates per year, or stock market where the company is traded, are also included (Karniouchina, Uslay, & Erenburg, 2011). Finally, a dummy variable for each year is included in the analysis to account for potential macro-shocks that affected the economy as a whole (Wiles, Morgan, & Rego, 2012). Lagged values of the HHI and control variables are used to attenuate potential endogeneity concerns (e.g., Mishra & Shah, 2009). To facilitate the interpretation of parameters, all independent and control variables, except the categorical ones, are mean-centered and variables on a 0 to 1 range (i.e., CAR and HHI) are rescaled as ranging from 1 to 100.

Table 4.4 : Variable List

Variable		Source	Operationalization	Used by/based on
Cumulative Abnormal Return	H1-H4	CRSP	Cumulative abnormal return for each security with four-factor model as benchmark model	Karniouchina et al. (2011)
External stakeholder award-giver	H2	Press release	Dummy variable, 1= giver is an external stakeholder organization; 0, else (reference category= public company)	Hendricks & Singhal (1996)
Private company award-giver	H2	Press release	Dummy variable, 1= giver is a private company; 0, else (reference category= public company)	Hendricks & Singhal (1996)
Dedicated event	H3	Press release	Dummy variable, 1=award given at event;0, else	Original measure
HHI	H4	Compustat	Sum of squares market share of the top four firms in the same SIC as firm of interest; normalized (/10 000*100), year before the event	Lee & Grewal (2004); Liu & Yang (2009)
Firm size	Control	Compustat	Total Sales, Recipient (000), year before the event	Geyskens et al. (2002)
IBES Number of Estimates, Per Year	Control	I/B/E/S	Number of analysts covering stock in the year before the event	Karniouchina et al. (2011)
Word Count, PR Body	Control	Press release	Words in the PR body (excluding title and company description)	Original measure
PR from LexisNexis Database	Control	Press release	Dummy variable, 1= Lexis Nexis; 0= Factiva	Original measure
PR from Business Wire	Control	Press release	Dummy variable, 1= Business Wire, 0= News Wire	Original measure
PR issued by Recipient	Control	Press release	Dummy variable, 1= PR issued by recipient; 0= PR issued by giver or both	Original measure

Variable		Source	Operationalization	Used by/based on
Multiple recipients mentioned in the PR	Control	Press release	Dummy variable, 1 multiple recipients mentioned in the press release; 0 else	Original measure
Innovation	Control	Press release	Dummy variable, with 1= if the press release contained information regarding NPD, innovative promotional activities or similar, 0, else	Original measure
Relationship	Control	Press release	Dummy variable, with 1= relationship terms describing the relationship between the supplier and the distributor, 0, else	Original measure
Sales and Promotion	Control	Press release	Dummy variable, 1= award justification discuss sales and promotion tasks performed by distributors; 0, else	Rosenbloom (2013)
Technical Support and Logistics	Control	Press release	Dummy variable, 1= award justification discuss support and logistic tasks performed by distributors; 0, else	Rosenbloom (2013)
Subsidiary	Control	Press release	Dummy variable, 1= recipient is subsidiary OR division of publicly traded company; 0, else	
NYSE	Control	CRSP	Dummy variable, 1= recipient traded on NYSE, 0, else	Karniouchina et al. (2011)
Year	Control	Press release	Dummy variable for each year, having 1995 as reference year	Wiles et al. (2012)

4.3.3. Event Study: Model Specification

The dependent variable in the event study is the abnormal return, defined as "the actual ex post return of the stock during the course of the event window minus the expected normal return during the same time frame if the event had not taken place" (Srinivasan & Bharadwaj, 2004, p. 12). In the event study, the null hypothesis H0 states that the event will have no impact on the mean or the variance of returns (MacKinlay, 1997; Srinivasan & Bharadwaj, 2004). As benchmark model for the expected normal stock return, this study uses the Fama-French three-factor with Momentum (henceforth, four-factor) model, as it complements the baseline market model with three additional factors and explains a higher portion of market inefficiencies (Carhart, 1997; Fama & French, 1996; Karniouchina, Moore, & Cooney, 2009). The estimation window for the benchmark model consists of 100 days starting 46 days before the event date (Karniouchina et al., 2009). The abnormal return (AR) is estimated by means of generalized autoregressive conditional heteroskedasticity (Garch) [1;1], allowing "the conditional variance to change as a function of past-realized residuals and past variances" (Karniouchina et al., 2009, p. 251). This model is used to test the main effect of channel award on the awardee's firm value (H1).

(4.1) $AR_{it}^{*} = R_{it} - E\,[R_{it}|X_t]$

(4.2) $E\,[R_{it}|X_t] = \alpha_i + \beta_i\, R_{mt} + s_i\, SMB_t + h_i\, HML_t + u_i\, UMD_t + \varepsilon_{it}$

Where:

AR_{it}^{*} = abnormal return

R_{it} = actual stock price return

$E\,[R_{it}|X_t]$ = normal return,

R_{mt} = return of the market portfolio estimated with CRSP equally-weighted index

SMB_t = return difference between small and large firms (Fama & French, 1996)

HML_t = return difference between firms with high and low book-to-market ratio (Fama & French 1996)

UMD_t = momentum factor, computed as the difference in average return between the highest 30 percent performing companies minus the lowest 30 percent performing (Carhart 1997)

ε_{it} =zero mean disturbance term.

4.3.4. Cross-sectional Regression: Model Specification

To draw additional inferences for the event of interest and its characteristics, cross-sectional regressions are performed on the abnormal stock returns aggregated across time per security (MacKinlay, 1997; Srinivasan & Bharadwaj, 2004). The daily abnormal returns in equation (4.1) are summed over the event window of interest in equation (4.3), resulting in the cumulative abnormal return (CAR). The CAR is then used as the dependent variable in equation (4.4), which is the "cross-sectional regression model of abnormal returns on the characteristics of the event of interest" (Srinivasan & Bharadwaj, 2004, p. 19). In terms of length of the event window, we follow previous studies recommending the use of short windows (MacKinlay, 1997; Srinivasan & Bharadwaj, 2004), including the date of the event (τ_1) and the following day (τ_2) to allow the investors to learn about the event if, for example, the press release is issued at the end of the trading day. Because alternative event window specifications containing the day preceding the announcement were not significant, this provides empirical evidence in favor of no leakage of information. The cross-sectional regression model in equation (4.4) is used to test the impact of the type of award-giver (H2), of dedicated events (H3), and of industry concentration (H4) on the awardee's firm value.

(4.3) $CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{it}^*$

(4.4) $CAR_i(0,+1) = \beta_0 + \beta_1 External + \beta_2 Private + \beta_3 Event + \beta_4 Concentration + \theta X_i + \eta_i$

Where:

External = dummy variable, taking the value of 1 if the giver of the channel award is an external stakeholder organization (i.e., magazine, association); 0 otherwise

Private = dummy variable, taking the value of 1 if the giver of the channel award is a private company; 0 otherwise

Event = dummy variable, taking the value of 1 if the channel award was given during an event; 0= otherwise

Industry Concentration = Herfindahl–Hirschman Index

X= Vector of control variables (see Table 4.4)

4.4. Results

The analyses were performed on the press release database matched with secondary data (n=178). Table 4.5 and Table 4.6 provide the descriptive statistics for the variables used in the analysis. Prior to the regression analyses, we inspected the correlation matrix and conducted multicollinearity verifications. For the model including all the predictors, the Variance Inflation Factor (VIF) ranged from a minimum of 1.25 to a maximum of 4.34. As all VIF values are below the threshold of 10 indicated by Mason and Perreault (1991), multicollinearity is not a concern in our data.

Table 4.5 : Descriptive Statistics (Continuous Variables)

Variable	Mean	Standard Deviation	Median	Maximum	Minimum
Normalized Hirshman-Herfidahl Index (%)	27.74%	12.77%	25.81%	85.09%	2.31%
Word Count, Press Release Body	294.02	196.34	250.50	1648.00	99.00
I/B/E/S Number of Estimates, Per Year, Recipient	84.01	52.57	87.00	235.00	1.00
Total Sales (000)	15,219 $	18,810$	11,066 $	135,028 $	59$

Table 4.6 : Frequencies (Binary Variables)

Variable	Frequency
Dedicated event	60.67%
External stakeholder award-giver	16.85%
Private company award-giver	8.43%
Press releases from Lexis Nexis	83.71%
Press releases from Business Wire	63.48%
Announcement made by the Recipient	77.53%
Multiple Recipients mentioned in the Press Release	24.72%
Relationship between giver and recipient	24.72%
Innovation-related activities	29.78%
Logistics and technical support	75.28%
Logistics and technical support x Sales and promotion	64.04%
Companies traded on the NYSE	64.61%

4.4.1. Event Study Analysis

Hypothesis 1 predicts a positive effect of the channel award on the stock return of its recipient. It is tested using the event analysis of the CAR provided by Eventus (Cowan, 2010) having the four-factor momentum as benchmark model for the expected normal return. The mean CAR associated with a channel award is equal to -.35%., with 77 positive and 101 negative abnormal returns in the sample. However, this result is not statistically significant in either parametric (i.e., Cross-sectional t=-1.593, n.s.) or nonparametric (i.e., Generalized Sign Z=-1.322, n.s.) tests. According to the findings in this article, H1 is not supported: investors seem neither to reward nor penalize recipients of channel awards, in general.

4.4.2. Cross-sectional Regression

The results of the cross-sectional robust regression with no random effects are displayed in Table 4.7. Robust methods were used for the cross-sectional regression because several outliers were identified in a preliminary multivariate assessment using the Mahalanobis distance (Hair, Anderson, Tatham, & Black, 1998). When outliers are present, robust methods are recommended over ordinary least squares as the latter produces biased estimations (Huber 1981). The least trimmed squares (LTS) method is used because it simultaneously accounts for bad leverage and outliers (Rousseeuw & Driessen, 1999). Given that the dataset contained companies that received multiple awards over the years, an alternative model specification with random intercept was tested to account for within-subject variability (Singer, 1998). As the difference between the models with or without random intercept is not significant, there is no strong evidence in favor of data clustering. Thus, the robust cross-sectional regression with no random effects is retained for the sake of parsimony.

Table 4.7 : Results for Robust Cross-sectional Regression (LTS Method, Four-factor benchmark model, Garch [1,1], equally-weighted market index, 100 days)

			Model 1		Model 2	
			Beta (S.E.)	**Pr>ChiSq**	**Beta (S.E.)**	**Pr>ChiSq**
β_0	Intercept		-1.09 (0.35)	**	-1.24 (0.94)	n.s.
β_1	External stakeholder award-giver	H2	0.11 (0.52)	n.s.	0.21 (0.60)	n.s.
β_2	Private company award-giver	H2	-1.02 (0.73)	n.s.	0.36 (0.63)	n.s.
β_3	Dedicated event	H3	1.23 (0.40)	**	0.81 (0.34)	**
β_4	Industry concentration	H4	0.03 (0.02)	**	0.06 (0.02)	***
	Controls					
β_5	Lexis Nexis				-0.22 (0.44)	n.s.
β_6	Business Wire				0.51 (0.38)	n.s.
β_7	PR issued by recipient				-1.07 (0.47)	**
β_8	Word number in PR Body				0.002 (0.001)	n.s.
β_9	Multiple recipients				-0.301 (0.46)	n.s.
β_{10}	Innovation-related activities				0.05 (0.37)	n.s.
β_{11}	Channel relationship				0.01 (0.37)	n.s.
β_{12}	Technical support and logistics				0.68 (0.68)	n.s.
β_{13}	Technical support and logistics * Sales and promotion				-0.08 (0.62)	n.s.
β_{14}	Total sales				0.10 (0.18)	n.s.
β_{15}	I/B/E/S Estimates (sum, per year)				-0.003 (0.005)	n.s.
β_{16}	Subsidiary				0.45 (0.40)	n.s.
β_{17}	NYSE				-1.18 (0.46)	**
	Time as Fixed Effect		no		yes	
	R-Square		0.04		0.46	

* p <.10; ** p <.05; *** p <.001; n.s. Not significant; PR = "press release"; Year of reference: 2011

4.4.2.1. Impact of Source of the Award

Hypothesis 2 predicts a positive effect on recipients' CAR of receiving a channel award from an external stakeholder organization rather than from a private or public company. The data do not provide support for this prediction as no significant difference is detected depending on the type of award-giver (external stakeholder: β_1= 0.21, S.E. = 0.60, n.s.; private company: β_2= 0.36, S.E. = 0.63, n.s.). This result suggests that investors do not seem to value differently channel awards coming from different types of award-givers. Thus, H2 is not supported.

4.4.2.2. Impact of Awards Presented during Dedicated Events

Hypothesis 3 predicts a positive effect on awardees' CAR of receiving a channel award during a dedicated event. The data provide support for this prediction. The parameter for the variable of interest is positive and significant (β_3= 0.81, S.E.=0.34, p <.05). Receiving an award during a dedicated event increases by almost 1% the CAR of the awardee. This result suggests that investors seem to reward recipients of channel awards more when these recognitions are given during dedicated events. Thus, H3 is supported.

4.4.2.3. Impact of Awards in Concentrated Industries

Hypothesis 4 predicts a positive effect on the CAR of a channel award recipient that is a firm operating in a more concentrated market. The data provide strong support for this prediction. The effect of the level of industry concentration is positive and significant (β_4= 0.06, S.E. = 0.02, p <.001). A point estimate for an average awardee at year 2011—this being the median year in the CAR distribution—was used to compare the effect of industry concentration for less concentrated industries (i.e., one standard deviation below the mean) and for more concentrated ones (i.e., one

standard deviation above the mean)[11]. In our sample, the CAR associated with receiving a channel award in more concentrated industries (-0.47%) is less negative than that in less concentrated industries (-2.01%). Based on our findings, as the level of industry concentration increases, investors seem to value more positively the fact that the company has won a channel award. Thus, H4 is supported.

4.4.2.4. Controls

Whereas most of the execution factors in the press release, the justifications for the awards and company characteristics are not significant, some control variables contribute significantly to the CAR of the channel award recipient. The first variable is time. Some years included as a dummy variable have a significant effect and there seems to be a downward trend in the effect of channel awards over time, as shown in Figure 1. An alternative specification was tested in which time was a continuous variable rather than a categorical one. According to the results, time has a significant, negative effect on the CAR (β_{time}= -0.11; S.E.=0.06; p <.05). This suggests that there might be an underlying negative time-related effect, in line with the decreasing effect over time of marketing media documented for product placement in movies (Karniouchina et al., 2011). The second significant control variable is the source of the press release. According to the findings, investors seem to penalize recipients announcing the awards on their own (β_7= -1.07; S.E.=0.47; p <.05). Finally, the stock exchange in which the recipient is traded appears to have a significant impact, with an average loss of -1.18% for those companies traded on the NYSE (β_{17}= -1.18; S.E.=0.46; p <.05). This suggests that that specific trading dynamics and types of companies typically traded on the NYSE versus the NASDAQ might have a role to play in the assessment of the market value of channel awards.

[11] These thresholds are consistent with those used by federal agencies to assess the level of low (i.e., below 1,500, corresponding to 15% in our dataset because of rescaling) and high (i.e., above 2,500, corresponding to 25% in our dataset because of rescaling) industry concentration. See http://www.justice.gov/atr/public/guidelines/hhi.html, consulted on November 10, 2013.

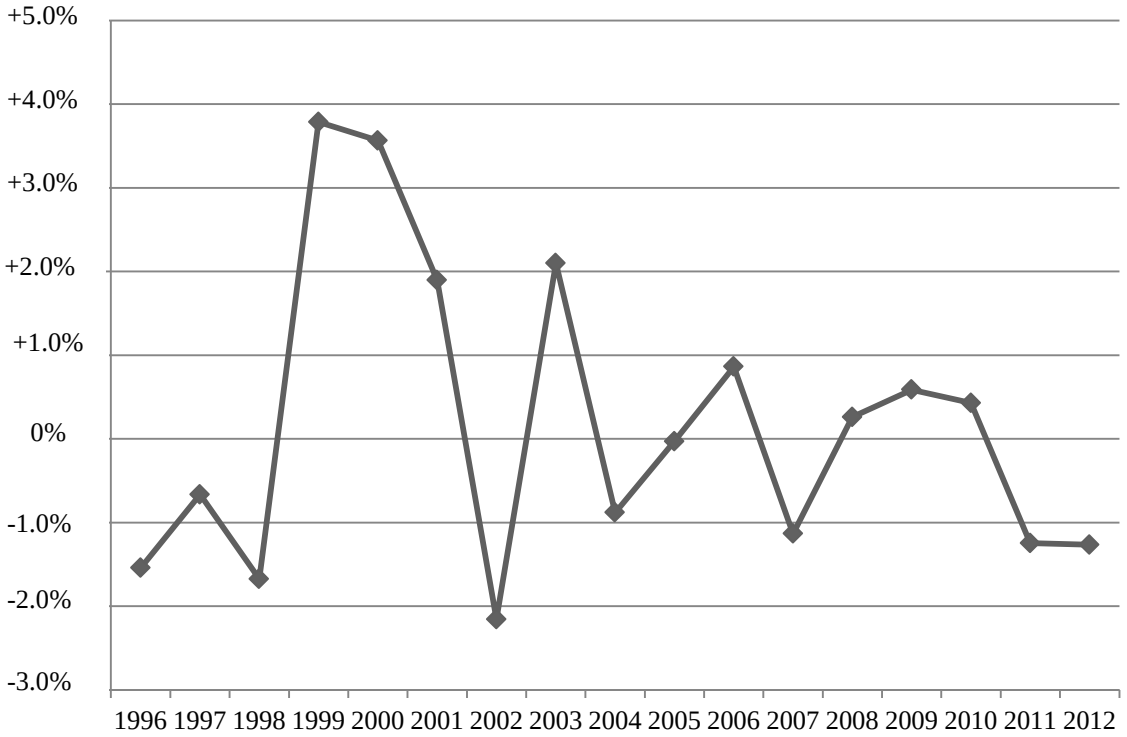

Figure 4.1: Mean CAR per year (Four-factor benchmark model, equally-weighted index, 100 days)

4.4.3. Robustness Checks

In order to assess the robustness of our results, several actions were undertaken, in line with guidelines on event studies (Karniouchina et al., 2009; MacKinlay, 1997). For H1, the CARs estimated with the four-factor model having two different estimation windows of 100 and 255 days were compared across five event windows, accounting for the possible leakage of information prior to the event and for a delayed response by investors (Srinivasan & Bharadwaj, 2004). In all of the above cases (Table 4.8), the CARs were not statistically significant and had comparable values ranging from -.06% to -.35%. The only positive value is found for the window (-1,0), but this difference is not significant in either estimation window. For H2-H4, the results from the cross-sectional regression on the CARs obtained with the equally- and value-weighted market index were compared. We also compared the results

obtained with the robust cross-sectional regression and those obtained using OLS as an estimation method. As shown in Table 4.9, similar patterns are generally detected for the sign of the coefficients and their significance levels. These additional tests provide overall support for the robustness of our results.

Table 4.8 : Robustness Check (H1)

4.8.a. Four-factor benchmark model, equally weighted index (100 days)

Days	N	CAR	Positive: Negative	Portfolio Time-Series (CDA) t	Cross-Sectional t	Generalized Sign Z
(-1,0)	178	0.06%	92:86	0.219	0.294	0.929
(0,0)	178	-0.06%	83:95	-0.302	-0.396	-0.422
(0,+1)	**178**	**-0.35%**	**77:101**	**-1.196**	**-1.593**	**-1.322**
(-1,+1)	178	-0.22%	87:91	-0.624	-0.826	0.179
(-1,+2)	178	-0.33%	81:97	-0.800	-0.915	-0.722

4.8.b. Four-factor benchmark model, equally weighted index (255 days)

Days	N	CAR	Positive: Negative	Portfolio Time-Series (CDA) t	Cross-Sectional t	Generalized Sign Z
(-1,0)	178	0.03%	87:91	0.090	0.126	0.234
(0,0)	178	-0.09%	86:92	-0.452	-0.621	0.084
(0,+1)	**178**	**-0.36%**	**79:99**	**-1.258**	**-1.800***	**-0.967**
(-1,+1)	178	-0.24%	82:96	-0.693	-0.970	-0.517
(-1,+2)	178	-0.28%	83:95	-0.699	-0.793	-0.367

In **bold**, the window retained for the cross-sectional regression

* p <.10; ** p <.05; *** p <.001; n.s. Not significant

Table 4.9 : Robustness Check (H2-H4)

4.9.a. Four-factor benchmark model 100 days, Garch [1;1] estimation, Robust regression

		Equally-Weighted	Value-Weighted
Intercept		-1.24 (0.94) n.s.	-1.64 (0.94) *
External stakeholder award-giver	H2	0.21 (0.60) n.s.	-0.28 (0.62) n.s.
Private award-giver	H2	0.36 (0.63) n.s.	0.26 (0.62) n.s.
Dedicated event	H3	0.81 (0.34) **	0.70 (0.4) **
Industry Concentration	H4	0.06 (0.02) **	0.04 (0.02) **

4.9.b. Four-factor benchmark model 100 days, Garch [1;1] estimation, OLS estimation

		Equally-Weighted	Value-Weighted
Intercept		-1.33 (1.35) n.s.	-0.65 (1.36) n.s.
External stakeholder award-giver	H2	0.43 (0.87) n.s.	0.16 (0.88) n.s.
Private award-giver	H2	-0.18 (0.88) n.s.	-0.22 (0.29) n.s.
Dedicated event	H3	1.19 (0.52) **	1.05 (0.53) **
Industry Concentration	H4	0.06 (0.02) **	0.06 (0.02) **

* p <.10; ** p <.05; *** p <.001; n.s. Not significant

4.5. Discussion and Contributions

Standing at the intersection between awards, channel management and marketing-finance literatures (Anderson et al., 2008; Frey & Neckermann, 2008, Geyskens & Gielens, 2012), this article is the first to attempt to quantify the economic value of channel awards beyond their incentive function inside the channel relationship. To the best of our knowledge, this represents the first application of market value approaches to channel management topics, in addressing the implications of exerting reward power through award giving (Coughlan et al., 2006; French Jr. & Raven, 1959). Extant literature at the marketing-finance interface has addressed the performance implications of channel design issues, such as the addition of new channels (Geyskens et al., 2002; Gielens et al., 2008; Lee & Grewal, 2004; Srinivasan, 2006), but has neglected channel management issues. This study addresses this gap by conducting an event study on the stock returns of recipients of

178 channel awards announced in press releases during the period 1996 to 2012. Data obtained by textual coding of these announcements were matched with financial indicators from CRSP, Compustat and I/B/E/S. The results generate relevant insights into the signaling function of this category of industrial awards.

The results of the event study contribute to the existing marketing literature by identifying a neutral effect of channel awards on the stock return of their recipients. According to our results, the stock price of the awardee does not experience a significant change due to the channel award within two days of its announcement. This finding departs from previous research documenting a positive effect of awards on performance (Filbeck et al., 2013; Hendricks & Singhal, 1996), but supports the notion that distinctions, such as rankings or awards, do not necessarily have a positive impact on the recipient's performance (Anginer & Statman, 2010). This explanation is consistent with the importance of contingency factors in explaining the different effectiveness of awards as signals of quality (e.g., Gemser et al., 2008; Hadida, 2009). Investors appear not to assess the award in itself, but look primarily at who presents the channel award, how and in what context, as shown by the results of the cross-sectional regression analysis.

The results of the cross-sectional regression contribute to a better understanding of the factors facilitating the occurrence of the positive signaling function of channel awards. No varying effectiveness of channel awards is detected depending on who presents such recognitions, as no significant differences are found regarding the source of the award. This finding suggests that the two different mechanisms described by Hendricks and Singhal (1996) for the differential impact of quality awards, that is, higher source credibility of an award from an external stakeholder award-giver and the signaling function of the award from a company, appear equally valid in the channel setting.

The context in which the awardee operates plays a significant role. In fact, awards given to firms operating in more concentrated markets have a small (+.06%), but significant positive effect on the stock return. The rationale for such an effect is

found in the importance of non-price attributes for competition among firms operating in more concentrated markets (Ramaswamy et al., 1994; Sutton, 1974). We argue that channel awards have a stronger differentiation potential in these concentrated markets, where collaborative relationships between channel members are particularly important, as acknowledged by Hofer et al. (2012). As industrial distribution is at a crossroad precisely because of the growing levels of concentration (Coughlan et al., 2006; Tompkings International, 2013), this study highlights the potential effect of channel awards in such a context.

How the award is given seems to have the strongest significant impact on the stock performance of the awardee. The stock return of a company receiving the award during a dedicated event experiences a gain of approximately +.81%. We argue that this increase is justified by the fact that distributing the award during an event amplifies the intrinsic social recognition function of awards, as discussed by Frey and Neckermann (2008). Previous research has already shown that non-selling activities performed during events such as trade shows contribute to relationship development (Gopalakrishna & Lilien, 2012; Moeran, 2010; Sharland & Balogh, 1996). In line with these findings, our research suggests that these events give additional visibility to the social recognition function of awards through the actual commitment shown by the organization and its participation in the event. This result is particularly interesting in relation to the competing explanations accounted for by the control variables. According to our findings, talking about the excellence of performance of tasks by the distributors (Rosenbloom, 2013), of their contributions to innovation (Yoon & Lilien, 1988), or even of the quality of the distributor-supplier relationship (Anderson & Narus, 1990) did not seem to have a significant impact on the CARs. Rather, investors seem to reward awards when given at events as this demonstrates to an audience an actual commitment to developing and acknowledging channel relationships. In other words, the visibility of dedicated events that not only reward relationships, but contribute to their development (Moeran, 2010; Sharland & Balogh, 1996) is the most important determinant of channel awards' impact on firm value.

4.6. Managerial Implications

The results of the present study provide managers with a better understanding of the impact of channel awards on firms' stock market performance and with some practical guidelines for their implementation. Although channel awards are a non-monetary incentive, this research shows that awards might have an indirect impact on the awardee's market value. Channel awards appear to have a positive impact when they are distributed during events that make the social value of awards more apparent due to the presence of competitors, customers, or other channel members. Thus, managers should be aware of the function of events such as trade shows, conferences and conventions "to inform, motivate, and reward [their partners]", as underlined by Brocade, a specialist in data and storage networking products (Brocade, 2009). Industrial distributors operating in increasingly concentrated sectors are shown to benefit more from these awards. This suggests that, in more concentrated sectors, channel awards contribute to distinguish awardees from the competition by highlighting non-price elements. However, as the channel award seems to be less beneficial when the announcement is made by the awardee, joint announcements with the giver could make for more effective signals.

4.7. Limitations and Future Research Avenues

By addressing the call to better understand the financial implications of distribution-related decisions, this research makes important contributions to both marketing theory and practice. Nevertheless, this research has a certain number of limitations that need to be addressed and that suggest promising directions for future research.

First, this research assessed the economic worth of channel awards by focusing exclusively on the awardee. Such a limited scope is coherent with the initial investigation of the topic, but it is believed that it could be fruitfully expanded in future studies. Besides award-winning companies, a more complete picture of the

phenomenon might be obtained by looking at award-givers. An event study investigating the impact of channel awards on the companies distributing them will determine whether or not the market performs a similar assessment of awards for both givers and recipients. It could be interesting to determine, for example, whether the negative effect of time on the effectiveness of channel awards identified by the additional tests conducted within the current study holds for both recipients and givers of channel awards. Karniouchina et al. (2011) found that the effectiveness of product placements in movies decreases over time. It would be interesting to determine whether industrial awards share such a characteristic with marketing media for all the parties involved.

Second, this investigation into the impact of channel awards on firm value looked at U.S. publicly traded companies. U.S. stock markets might represent a boundary condition for testing the effect of channel awards because the U.S.A. is among the countries that give out the most awards (Frey & Neckermann, 2008). This could imply that American investors might be particularly used to and responsive to awards. As countries around the world differ in how pervasive is the practice of presenting prizes and awards both at the individual and the corporate levels (Frey & Neckermann, 2008), future research could explore whether differences exist in investors' valuation of such awards based on the cultural characteristics highlighted by Hofstede, Neuijen, Ohayv, and Sanders (1990). As the social dimension of awards given during dedicated events appeared to be significant in this article, would this effect be stronger in collectivistic cultures rather than in individualistic ones?

Finally, this study considered channel awards as a whole and explored only a limited number of signaling features of channel awards, such as the award-giving event, the type of giver, and the description of channel functions. Pushing further the investigation initiated by Gemser et al. (2008), future studies could investigate whether channel awards will vary in effectiveness as signals depending on other characteristics such as the type of award-giving event (i.e., industry convention, company convention, private event) and the selection mechanism for the winning

company (i.e., nomination-based, vote by participants, etc.). By pursuing the investigation along these lines discussed, we hope to stimulate additional research on this important aspect in the marketing channels area, in order to gain a better understanding of channel awards and of their impact on market value for all the parties involved.

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Chapter 5.

General Conclusion

The main goal of this dissertation, comprised of three empirical essays, was to explore how information is generated, exchanged and used in indirect marketing channels. Following Dwyer's (1995) acknowledgment that marketing channel topics are inherently multidimensional, this dissertation used different theoretical perspectives to investigate the different properties of information, namely, organizational information processing (Tushman & Nadler, 1978), interorganizational relationship lifecycle (Dwyer et al., 1987) and signaling theory (Spence, 1973). More specifically, the three empirical studies part of the dissertation explored the implications of the information flow inside the marketing channel and outside of it, in terms of its role in the NPD, solution provision and channel management.

As regards the implications of information inside the channel, the dissertation demonstrates that information flowing between marketing channel members can be used to innovate. In Chapter 2, the empirical study provides deeper insights into how new product ideas are generated by distributors (Accenture, 2009; Crawford & Di Benedetto, 2008). The findings show that there is no "one-size-fits-all" type of information processing, but at least four types, according to a typology emerging from the organizational information processing theory (Tushman & Nadler, 1978) and a qualitative investigation. When faced with more complex product-related problems, distribution intermediaries with higher technical competence move from being simple problem informers to solution managers, coordinating exchanges between producers and customers. When faced with relatively simpler problems, the higher technical competence of industrial distributors transforms them from solution informers to solution implementers that actually improve the product. This novel typology is valuable for both marketing theory and practice. This typology provides

researchers with a clearer picture of how distribution intermediaries generate ideas as part of the new product lifecycle management and highlights the NPD stages herein where their contribution can be deployed. Managers can use the typology to diagnose and plan for distributors' contributions to innovation. The typology might also help in designing specific incentive schemes depending on the type of contribution sought from the distribution intermediary.

Remaining at the level of the implications inside the channel, the dissertation shows that the information generated in the context of customer solutions can lead to an acceleration of the relationship between the customer and the solution provider—in this case, the distribution intermediary—and generate higher returns for the latter. In Chapter 3, by focusing on customer solutions as a highly information intensive innovative offering (Sawhney, Wolcott, & Arroniz, 2006), this study addresses two gaps in the marketing literature. First, it provides the empirical support that was currently lacking regarding the positive outcomes of solution provision (Nordin & Kowalkowski, 2010). Second, it compares two alternative and plausible explanations—'solution as leverage' and 'solution as accelerator'—concerning the group of customers that is likely to produce the higher gains in retention, total sales and cross-selling. These explanations are issued from the integration of the process-centric view of solutions (Tuli et al., 2007) and the relationship lifecycle theory (Dwyer et al., 1987; Jap & Anderson, 2007). Higher gains are found to come from solutions provided to new customers ('solution as accelerator'), supporting the notion that solutions can be an important opportunity to gather information contributing to the relationship development, rather than as an offering that requires prior information about and experience with the customer ('solution as leverage'). The fact that solutions facilitate information gathering about new customers and achieve higher retention, sales volume and cross-selling is an important contribution to marketing literature, on top of the empirical evidence on the occurrence of the positive outcomes. Managers can broaden their view on the benefits of solutions beyond the short-term perspective, given that solutions are found to allow recent

customers to equate, if not surpass, retention and sales levels of established customers.

Moving to the implications of the information flow outside the channel, the dissertation investigates the financial impact of the new information consisting of the presentation of a channel award on the firm's value of award recipients. By using signaling theory as underlying framework (Connelly et al., 2011; Spence, 1973), the channel award is seen in Chapter 4 as a signal sent from channel members as outcome of the information flow associated with channel performance assessment (cfr. Hanmer-Lloyd, 1996). The results of the event study (Fama et al., 1969; MacKinlay, 1997) shows that there is no positive abnormal return associated with channel award announcements. There appears to be no difference regarding the source of the award (i.e., a public or private company versus an external stakeholder organization). The study identifies two significant contingencies that affect investors' assessment of channel awards, namely, the presentation of channel awards during dedicated events and to firms operating in more concentrated markets. These findings contribute to the growing body of research at the marketing-finance interface by looking at distribution topics, an area that has received only limited coverage thus far (Gielens & Geyskens, 2012). They also provide managers with a better understanding of the economic worth of these non-monetary forms of channel incentives and of the importance of the relational dimension associated with award presentation.

Taken as a whole, this dissertation highlights specific features of the information flow within and outside of the marketing channel. This contribution intersects with other areas such as innovation, solution provision and channel management. Future research could investigate the relationship between the three topics covered in each empirical study by adopting a longitudinal perspective. In fact, solution provision was found to produce higher gains in retention, total sales and cross-selling (Chapter 3) and to contribute to generate new product ideas (Chapter 2). By tracking over time different solutions provided by industrial companies, it will be possible to further assess the contributions of solutions to customer outcomes and to

innovation efforts building on the insights generated by distribution intermediaries during the solution provision process. By zeroing in channel awards (Chapter 4) that explicitly acknowledge these contributions, scholars might determine the impact of these activities on investors' valuation. Additional questions might be answered, such as: Would investors respond more positively to awards rewarding solutions' contribution to performance-related outcomes or to innovation?

Innovation is but one of the information intensive activities performed by channel members (Glazer, 1991; Mudambi & Aggarwal, 2003; Rosenbloom, 2013). Thus, the typological approach (Doty & Glick, 1994; George & Bennett, 2005) to the information flow in the context of NPD could be extended to other relevant flows and activities performed by channel members that are equally relying on information as underlined by Rosenbloom (2013). Among these activities, there are promotion and customer service. The literature acknowledges that distributors' feedback is relevant for promotional activities during the launch of a new product (Song, Di Benedetto, & Zhao, 2008; Wilson & Woodside, 1992). It also acknowledges that distribution intermediaries are often in charge of customer service and technical support on behalf of producers (Mudambi & Aggarwal, 2003; Pappu, 2005). However, there is no detailed account of how information is generated, exchanged and used within these important activities. Are there different recurring approaches used by distributors when addressing promotion-related issues or when engaging in technical support encounters? The typological approach could contribute to address these questions in order to obtain a more fine-grained picture of how information processed by distributors contributes to channel excellence in the areas of promotion and customer service.

This dissertation was built on the premise that the information flows between the channel members. Yet, the recent study by Frazier et al. (2009) investigated how the extent, but also the type of information shared by distributors with their suppliers is influenced by specific relational characteristics and contextual factors. As these authors focused only on strategic information, future research could pursue the

investigation of what factors facilitate or hamper the effective flow of information among channel members. Several questions could be addressed in this regard, such as: How can parties make sure that all the information required for the effective performance of the different marketing flows is available? Would the relational competences to be developed by staff involved in solution provision (Chapter 3) be equally important for all personnel interfacing with customers and suppliers during the performance of the other marketing flows? Would the environmental conditions such as market turbulence increase the importance of effective information within specific flows, but make the process of sharing the information more challenging?

At the same time, this dissertation highlights advantages and benefits associated with the information flow in the marketing channel. To complete the picture, future studies could look more closely at disadvantages and costs associated with the same information flows. It could be interesting to determine whether channel relationships are affected by the dark side of close relationships in the domain of innovation addressed by Noordhoff, Kyriakopoulos, Moorman, Pauwels, and Dellaert (2011). As potential customer opportunism was found to mitigate the positive effect of interorganizational collaboration (Noordhoff et al., 2011), would the same relationship apply to distribution intermediaries' contribution? Furthermore, Gundlach and Cannon (2010) underline how several verification mechanisms often need to be developed regarding information shared in the context of trusting relationships. In channel settings, would the costs of implementing these verification mechanisms outweigh the benefits of information? Similarly, the costs of the multiple interactions involved in solution provision (Sawhney, 2006), especially in the case of new customers, need to be included in future studies to get a better understanding of the positive outcomes of solution provision (Chapter 3).

Moreover, additional research could be pursued to investigate the financial impact of relevant distribution-related activities that companies share with external parties, due to the paucity of studies on this topic at the marketing-finance interface (Gielens & Geyskens, 2012). Trade and academic literatures present several actions

undertaken by industrial companies that, once announced in a similar manner as channel awards (Chapter 4), provide additional information to investors regarding the state of distribution activities. For example, what would be the financial impact of announcing the appointment of channel managers, a key management role in the channel setting (Mehta, Dubinsky, & Anderson, 2002; Rosenbloom, 2007)? Moreover, companies might pursue a further integration of their information systems with their distributors, similarly to what has been done for upstream suppliers (Filbeck, Gorman, Greenlee, & Speh, 2005). Would investors evaluate positively these activities oriented towards an improvement in the information flow with distribution intermediaries? How would the impact of these activities compare with activities involving upstream suppliers?

Finally, a major trend transforming the reality of industrial marketing channels is the advent of electronic communications and online sales channels (Frazier, 1999; Tompkins International, 2013; Rosenbloom, 2013). This phenomenon is highly relevant in relationship to the topics addressed in this dissertation. For example, would these new means of communicating affect the ways in which distribution intermediaries process information related to innovation (chapter 2)? Would the online medium impact the way product-related problems are identified and eventually solved (Chapter 2)? What is the impact of the combination of offline and online contacts with customers and suppliers during solution provision affect relationship development and performance outcomes (Chapter 3)?

We hope that this dissertation will renew the interest of researchers in the marketing field for the role that information plays in contributing to channel excellence. Approaching channel topics through an informational perspective as in this dissertation could significantly contribute to advance the knowledge in this domain. We believe that the future research avenues discussed in these final remarks are promising suggestions that will enhance the understanding of this important area of industrial marketing.

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